SPATIAL PLANNING FOR DEVELOPMENT OF SHAHGANJ TEHSIL, DISTRICT JAUNPUR, U.P.

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BY
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DECLARATION

I declare that the thesis entitled "Spatial Planning For Development of Shahganj Tehsil, District Jaunpur, U.P., INDIA" is my own work conducted under the supervision of Dr. B.N. Mishra, Department of Geography, University of Allahabad, Allahabad approved by Research Degree Committee.

I further declare that to the best of my knowledge the thesis does not contain any part of the work, which has been submitted for the award of any degree either in this University or any other deemed University without proper citation.

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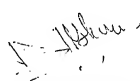
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CERTIFICATE

This is to certify that the work entitled "Saptial Planning for Development of Shahganj Tehsil, District Jaunpur, U.P." is a piece of research work done by *VANDANA VARMA* under my guidance and supervision for the Degree of Doctor of Philosophy of University of Allahabad, Allahabad, INDIA.

To the best of my knowledge and belief the thesis:

(i)   embodies the work of the candidate herself,

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(iii)   fulfills the requirements of the ordinance relating to the D.Phil Degree of the University,

(iv)   is up to the standard both in respect of contents and language for being referred to the examiner.

Signature of the Supervisior

(Dr. B.N. Mishra)

who have contributed a lot by providing valuable information and data for this research work.
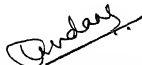
I am also thankful to all the members of ministerial and menial staff of the Department of Geography who have all along been cooperative to me.

I wish to express my indebtedness to all those scholars whose books and articles have provided the necessary source material for this present work. They have been referred to in the thesis at appropriate places suitably.

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Almighty God has been very kind to me during all this process and my only worth is that I may never prove unworthy of his kindness in my quest for knowledge.

(VANDANA VARMA)

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Place: ALLAHABAD.

CONTENTS

CHAPTER ONE
THE CONCEPTUAL FRAMEWORK

INTRODUCTION:

The notion of Regional Planning either in the form of physical planning of built environment or in the form of river valley planning has been in vogue in the western world since 1930's or even before. But in case of the third world countries, it all started during the fifties only after their freedom from the colonial rules. The problem of unemployment, spatial inequality in development, lack of infrastructure, poor spatial and functional organization of functions and services, rapid growth of population, and urbanization due to migration from rural areas, low yield in agricultural sector, and mismatch in the resources and development etc. necessitated the formulations of development strategies at the micro, meso and macro levels.

Regional planning is the process of formulating and implementing social objectives in the ordering of activities in the supra-local, but sub-national space (Diamond, 1985). It is perhaps the most articulated branch of applied geography. It is one of the most rapidly expanding and dynamic sub disciplines in the contemporary development of geography. Its roots however, go back to the middle of the 19th century in the work of 'Von Thunen' and 'Weber'. And then, to the middle of the 20th century in the seminal contributions of 'Christaller', 'Galpin', 'Mukerjee', 'Odum', 'Blance', 'Vidal de la Blache', 'Howard', 'Macekay', 'Patrick Geddes', 'Mumford' and 'Losch' (Mishra 83).

Regional Planning is interdisciplinary in nature, as it cuts across several other disciplines. Its core, however, lies in geography, as space is its point of departure. It addresses problems of not only production, but also distribution and environmental quality in spatial or regional terms. It acquired special significance as the spatial configuration of socio-economic development changed drastically due to massive urbanization without taking into account the social and environmental implications.

The spatial dimension of Regional Planning is further exemplified by the fact that a region is either the product of territoriality (areal homogeneity) or functionality (areal linkages with nodes) and it has locations, spatial extent and boundary (Diamond, 1985). A region may belong to any tradition e.g. Landform region-based on earth sciences tradition or Population region-based on cultural tradition. The delineation depends on purpose, scale and processes. But the spatial components cannot be ignored. Regional Planning strives to achieve growth with social equality and environmental quality at different regional scales in different locales.

Regional Planning is concerned with the questions of sectoral and spatial development; and it is identified with the distribution of the benefits of economic growth, the provision of basic needs including public services, the targeting of policies to meet the needs of disadvantaged groups, self -reliant and participatory development and with ecological considerations (Logan 1985). This may be referred as supra-local planning, which interfaces the local and national planning. Local planning is physical in content and locational in nature, and national planning is sectoral in content and allocative in nature. The process, which seeks to create spatial balances in socio-economic development, is called Regional Planning (Mishra, 1992).

CONCEPT AND MEANING OF SPACE:
CONCEPT OF REGIONS:

It is very difficult to define a region because different people to mean different things have used the concept. The concept is generally linked with 'space' and has spatial

dimensions. So on the basis of elemental factor of space, a region is a geographic or areal unit with certain limits and bounds. A region, may, therefore, be thought of as an areal or spatial organization of various dimensions.

Region being an areal unit, its concept occupies an important position in geographic research. But there is no catholic definition of a region, and the 'opportunistic ignorance' (Myrdal, G., 1969) has lead to a considerable vagueness in the meaning of a region in geography. 'Richardson' (Richardson, H., 1972) has correctly suggested that thousands of words have been written on this topic without coming to a fully satisfactory answer. 'Davis' (Davis, Kingsley, 1972) adds that by beginning with the geographical regions as customarily define, we shall find an array of information that any theory must somehow fit. For most geographers, region is an objective reality linked with space and defined in terms of space. According to 'Joerg', any portion of the earth's surface where physical conditions are homogenous can be considered to be a region in the geographic sense. 'A.J. Herbertson', felt that a region is "a complex of land, water, air, plant, animal and man regarded in the spatial relationship as together constituting a definite portion of the earth's surface".

Owing to considerable vagueness in the definition of a region, the delimitation of regions has also been subjected to prolonged debate and no satisfactory solution has been put forward so far. 'Richardson', has tried to classify the criteria employed to delimit regions into 3 categories viz. Homogeneity, nodality and programming. The first stresses "Homogeneity" with reference to someone or combination of physical economic, social or other characteristics, the second emphasizes the so called "nodality" or "polarization" usually around some central urban place, and the third is "programming" or "policy-oriented" concerned mainly with administrative coherence or identity between the area being studied and available political institutions for effectuating policy decisions. In addition to these, there are adhoc" regions, which can be delimited.

For certain specific purposes, such as the development of water resources, mineral resources etc. a tentative hierarchy of regional unit of different types is given below:

REGIONAL UNITS

HOMOGENOUS			NODAL		ADHOC
SINGLE FEATURE	MULTIPLE FEATURE	COMPAGE	METROPOLITAN	AREA	TRANSITIONAL ZONE DEPRESSED AREA RIVER VALLEY
1. NATURAL 2. ECONOMIC 3. CULTURAL 4. OTHERS	1. RESOURCE P. REGION 2. OTHERS				
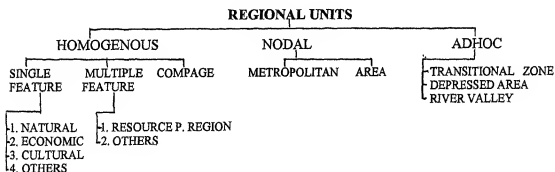
HIERARCHY OF REGIONAL UNITS:
TYPES OF REGIONS:

Each and every part of the world is faced with the one or the other type of problems like economic, political, social, cultural and so on, which may also be treated as other type of criteria to identify regions. Thus, there can be 4 types of regions :

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FORMAL REGION:

A formal region is a geographical area, which is homogeneous in terms of selected geographic criteria (as similar topography or climate), or selected economic criteria (such as similar per capita income level, uniform unemployment opportunity, similar consumption patterns etc.). 'Mayer'(Mayer, J.R.,1968) states that the homogenous region stresses homogeneity with reference to someone or combination of physical, economic, social or cultural and other characteristics. Homogenous region vary from single topic to total topic and from elementary partial integration to complex total integration.

FUNCTIONAL REGION:

A Functional region emphasizes interdependence (or linkages). It is composed of heterogeneous units such as cities, towns, and villages, which are nevertheless, functionally interrelated. It is a nodal region since it emphasizes intra-regional spatial differentiation. Population and economic activities are seen as concentrated in or around some specific foci of activities e.g. (large urban centers). The functional inter-relationship are usually revealed in flows of people, factors, services etc. (commodities and communication). Its sphere of influence usually spreads over heterogeneous units. It is a place, where adjacent contrasting physical environment permit a variety of activities, which is complementary in supporting the life of whole. The flow tends to polarize towards and from one or two dominant centres, which are usually cities. The polarization gives a specific kind of spatial organization, which is, what the concept of functional region stresses.

PLANNING REGION:

According to 'Keeble', a planning region is an area that is large enough to enable substantial changes in the distribution of population and employment to take place within the boundaries, yet which is small enough for its planning problems to be viewed as a whole. According to 'Mayer', such regions are policy-oriented regions concerned mainly with administrative coherence. Although the boundaries of planning regions are arbitrary and may not confirm to homogeneity and nodality; yet the political realities and availability of data makes them a practical necessity (Chand, M. & Puri, V.K., 1983).

Planning region as 'Mishra', (Mishra, R.P., 1976) remarks, "are synthetic regions fusing and blending into a whole concept of economic, social, environmental and administrative regions. The "place-work-folk" formula proposed by 'Lee Play' and adopted by 'Patrick Geddes' symbolizes a life process and elements are synonymous with environment, economy and society. These 3 constitute the inter-dependent elements of a single processes acting, reacting and inter acting (Geddes, P., 1949). 'Rao'(Rao, R.P., 1960), conceives "a Planning Region as a system consisting of various regional factors, which interact and operate in mutual actions and reactions, and any change in one normally leads to change in others, thus setting up a chain reaction. 'Pathak' & 'Kundu' (Pathak, C.R., & Kundu, A., 1973), while listing the characteristics of planning regions have observed that a Planning Region should be large enough to contain a range of resources with satisfactory level of product combination.

'P.D. Malgavkor' & 'B.M.Ghaira' (Malgavkor, P.D., & Ghaira, B.M., 1972) also clearly emphasize the factors of homogeneity, nodality and administrative convenience for a planning region.

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DEPRESSED REGION:

Some areas are more developed, some are less, some are developing regions, while the others are under-developed and backward. Such areas as having similar kind of developmental problems are termed as "Depressed Regions". They are marked by low level of availability and utilization of natural resources resulting in a low level of standard of living, income and employment. They are also characterized by over dependence of some highly localized industries. A planning region, pertaining to depressed regions tries to remove the disadvantages of regional specialization both by embarking upon complementary policies for spontaneous development as well as a rational policy intended to stimulate new economic activities in the affected regions (Boudeville, H.R., 1955).

CONCEPT OF PLANNING:

The concept of planning has been applied to the human affairs right from the inception of human civilizations, when man took preliminary initiatives to make purposeful changes in his environment. But passing through various stages in ancient and medieval times, it acquired a new logical dimension in modern period particularly after 1950 when several underdeveloped countries got liberated from foreign rule. These countries were grouping with host of socio-economic problems and trying for immediate solution. In spite of the long-use of the concept in human affairs the final conceptual base for its meaning and definition has not yet been evolved.

Planning means different things to different people. Its definition varies from person to person, from discipline to discipline, from region to region and from time to time. It is perhaps because of this that planning is taken to be a continuing process. Planning is essentially an attempt at working out a rational solution of problems, an attempt to co-ordinate means and ends. It is a rational approach to the future. It is, thus not merely ascertaining the future unless making provisions for it. According to 'Planning Commission of India', Planning involves the acceptance of a clearly defined system of objectives in terms of which to frame overall policies. It also involves the formulation of a strategy for promoting the realization of ends defined.

'Friedmann',(Friedmann, J., 1963) while defining the term planning observes that it is a way of thinking about socio-economic problems and is predominantly oriented towards the future. 'Hilhorst'(Hilhorst, J.G.M., 1971), states planning involves the process of decision making that aims at bringing about optimum combination of activities in a specific area by which the use of instrument of policy is coordinated given the objectives of the system and the constraint imposed by available resources. 'Marriam'(Marriam, C.E.,1963), views 'planning as the use of collective intelligence and fore sight to chart direction, order, harmony and progress in public activity relating to the human environment and general welfare. 'Dror'(Dror, Y., 1963), defines 'planning as the process of preparing a set of decisions for actions in the future directed at achieving goals by preferable means. According to 'Faludi'(Faludi, A., 1973), 'Planning is the application of Rational Methods to the setting of objective and their translation into public policies and solid action programme with a vision on the future. 'Charles Bettlehem', says – a determined end and means equally determined for the attainment of this end constitutes the essence of every plan. 'Lewis L. Lorwan' says, planning in general is a conscious

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effort to direct human energy for the purpose of securing a rationally desirable end. 'Mishra'(Mishra, R.P., 1976) incorporates these views in his definition and observes that planning should serve as means to so organize human society that it can adjust itself to the changing socio-technical environment and can use this environment to maximize the welfare of its members.

TYPES OF PLANNING:

Planning is not only a comprehensive activity, but also a complex arduous process that includes a variety of social, economic, political, environmental and technical factors. As a result, the typology of planning stands out to be one of the most challenging and puzzling problems of Geographic taxonomy (Mishra, B.N., 1990). Owing to multiplicity of factors involved in the process of planning, its application has been stretched to such informal limits that any organized activity aimed at improving the functioning of an institution, agency or society is commonly referred to as "PLANNING", e.g. Agricultural Planning; Industrial Planning, Economic and Developmental Planning, Town and Country planning, Drought-Prone Area Planning, Livestock Planning and Family Planning etc. But all remedial activities can't necessarily be Planning. An organized formal activity can be addressed as Planning. The volatile nature of planning has lead to the selection of several criteria for the classification of Planning. But the most accepted basis is of which the typology of planning has been attempted are territorial level, time, purpose, content, organization and approaches. A brief description of the types of planning based on the above criteria is discussed below:

TERRITORIAL LEVEL BASED PLANNING:

On the basis of Territorial Level, planning can be divided into Single Level Planning and Multi Level Planning.

➢ SINGLE LEVEL PLANNING:

It is typical of underdeveloped and developing countries of the world e.g. Asia, Africa etc. that are characterized by the low level of resource utilization, poorly organized economic and unskilled labour power. Under such conditions the planning is attempted only at the National Level. Lower territorial levels; involve themselves in the planning process, only at the implementation stage, because of the absence or inadequacy of technical know-how and lack of an institutional framework, which are not developed for the purpose.

➢ MULTI LEVEL PLANNING:

On the other hand, Planning can be attempted at several territorial levels viz. Macro Level (National), Meso Level (Region) and Micro Level (Local). This type of Planning has an edge over the former type in that it considerably facilitates the development and utilization of resources at the grass root level, provides for the training of people to plan for their own welfare, takes into account the local and regional needs and aspirations and is more responsible of national requirements. It also paves the way for development of new social and economic institutions at the local level and, thus, strengthens the positive aspect of the development process.

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TIME BASED PLANNING:

On the basis of Time, Planning can further be sub-divided into 'short-term' and 'long term' planning :

> ➤ **SHORT TERM PLANNING:**

It is designed to solve certain pressing problem that doesn't require large-scale changes in the existing social and economic structure. This type of planning may be taken up to improve the employment opportunities and to increase the production and to adjust the production to market demand and supply and to achieve the targets set by Long-Term Planning.

> ➤ **LONG TERM PLANNING:**

According to 'R.P. Mishra', the long term planning aims at the institutional and structural changes necessary for changing the nature of social and economic goals of a society. It is sometimes erroneously called 'Perspective Planning' also. It is restricted to setting the directions and the final goals and the long term planning provides means to achieve these goals. So, we can conclude by saying that 'Short Term Planning' and 'Long Term Planning' are the means to achieve the desired goals.

PURPOSE BASED PLANNING:

The basic purpose is related to improving the functioning and performance of basic sectors of economy i.e Industry, Agriculture, Transportation, Power and Telecommunications etc. just to achieve targets set for them hardly to accelerate and stabilize the process of development in order to solve socio-economic problems of a region. The former is called 'Sectoral Planning' and the later is called the 'Spatial Planning' (Hermansen, T., 1971).

> ➤ **SECTORAL PLANNING:**

It is sometimes called 'Special Purpose Planning' and envisages fixing of targets for major sectors of economy keeping in view the availability of physical and socio-economic resources for future demands of increased population, demand elasticity, exports and increased income. Sectoral Planning, as it is practiced today is essentially economic planning, the social contents of which are only peripheral if not incidental. It ignores spatial factors and hence treats a country or a region as a point rather than an area, where human beings live and work. In any case Sectoral Planning, even when attempted in an integrated way, rarely brings a functional cohesion to developmental process.

> ➤ **SPATIAL PLANNING:**

'Hermansen', observes that the order in the process of development is not confined to functional sub-systems, but it is equally profound in the spatial incidence and spread of socio-economic development and manifests itself in the formation of spatial sub-systems and regions. The spatial planning takes into account the spatial factors and realities of a region and, therefore, represents the planning process as a whole. Hence, it has to be different from Sectoral Planning. The fundamental difference between the two types of planning is that in the later, the physical expression of development on the space is the result of Sectoral Planning while in the former the spatial development naturally emerges from the integrated spatial plan. It has now been realized that there existed a

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close interdependence between national development and the structure and evolution of the spatial pattern of human activities. Spatial Planning can be of two types: 'Adaptive' and 'Developmental Planning'. Adaptive spatial planning is based primarily on recognition of the impact of general trends of development on the spatial system, while the evolution of the later is conceived as a response to the pressure and requirements of national economic development.

ORGANIZATION BASED PLANNING:

Planning has been divided into 'Imperative Planning' and 'Indicative Planning' on the base of Organization.

> ### IMPERATIVE PLANNING:

'Imperative Planning' presupposes the full control of the productive resources by the public sector or the government. The private sector has no positive say in the process of development. Such Planning is in-vogue in socialist countries like USSR, China and so on. Most of the means of production are owned by the government and, hence, the decision on where to invest, how much and in what is made and implemented by the government. By its very nature, it is centrally directed planning, which is perfectly controlled and managed by the government at the apex level.

> ### INDICATIVE PLANNING:

'Indicative Planning' allows the mainspring of economic growth to remain in the private sector. Although several major sectors may be fully or partly owned by the government examples of this are found in the West European Countries. The government very rarely intervenes directly in the affairs of individual firms so long as they function within the framework of the economic policy enunciated by the government. Planning in this case, is rather indirect and takes the form of collaboration and cooperation between the public and private sectors. Producers and consumers are free to change their activities in response to changes in the market condition.

CONTENT BASED PLANNING:

Planning can be divided into 'Economic Planning' and 'Developmental Planning' from the point of view of the Content.

> ### ECONOMIC PLANNING:

'Economic Planning' is typical of such regions as are economically advanced countries e.g. European and American countries etc. In these countries the social and economic infrastructure required for the economic growth and the structural adjustments of the economy are developed. This type of planning is basically aimed at reurbanization and modernization of economic system in order to meet changed market and public demand (Lewis, A., 1966).

> ### DEVELOPMENTAL PLANNING:

'Development Planning' is in vogue in mostly underdeveloped and developing countries, which lack necessary infrastructure for growth and expansion in the economy. This type of planning is mostly practiced in African and Asian countries, which suffer from the low level productivity, low per capita income, low levels of income, undesirable attitudes in life and at work, small industrial sectors, growing population and institutional barriers to change. Developmental Planning is far more comprehensive and is designed to

generate structural changes in the society in order to facilitate the growth of national economy. It also includes social Planning. Under this planning, efforts are made to solve these problems through policy intervention and action programme. 'Myrdal', observes that, the Developmental Planning involves the co-ordination of policies in order to attain or speed up development. Where Development means an upward movement not merely of National Income, but also of the entire social system. This involves therefore, the policy intervention to accomplish economic, social and institutional reform on the one hand and economic growth on the other.

APPROACH BASED PLANNING:

On the basis of methodology, planning can be 'Normative' or 'System' planning.

➢ NORMATIVE PLANNING:

'Normative Planning' aims at achieving best results with respect to the established goals. It hardly takes into account the social and institutional factors of Planning. According to 'Banfield'(Berry, B.J.L., 1961), Normative Planning comprises 5 steps as discussed below:
(i) Defining the goals and objectives.
(ii) Phasing of the plan and defining the sequences and the linkages.
(iii) Linking and integrating functional elements of the planning.
(iv) Linking and integrating the territorial plans.
(v) Determining the contribution that specialists can make and the co-ordination of their activities.

'R.P. Mishra', observes that, the physical planning comes within the purview of the Normative Approach. In 'Normative Planning', the planner is essentially the expert analyst, surveyor and the operator all at the same time; he is less concerned with what happens to the plan, if it is implemented in a hostile environment. Here, the planners' function is just limited to the preparation of the plan and its implementation is left to the politician and the politico-administrative institutions.

➢ SYSTEM PLANNING:

'System Planning' treats Planning as a Social Process, which operates in a varied socio-technical context. Under this, the structure to be planned is regarded to be functioning like a system and is constituted of a variety of social, political and institutional factors and their relationship. According to 'Musil'(Smailes, A.E., 1968), the important elements of system planning are:
(i) Various goals and ideologies.
(ii) Concrete task to be undertaken by planning.
(iii) Carrying out of development task.
(iv) Organizational units by which developmental tasks are realized.
(v) The actions and professions participating in the Planning.
(vi) Role of action and norm regulating the relation between individual participant and organizational units.

CONCEPT OF SPATIAL PLANNING:

'Harmensen', observes that the order in the process of development is not confined to functional sub-system, but it is equally profound in the spatial incidence and

the spread of economic development, and manifests itself in the formulation of the spatial sub-systems or regions.

The Spatial Planning takes into account the spatial factors and realities of a region and therefore, represents the planning process as a whole. Hence, it has to be different from Sectoral Planning. It has been realized that there exists a close interdependence between national development and the structure and evolution of the spatial pattern of human activities. Unless, we plan to change the spatial structure of these activities the basic, social, economic and environmental goals of planning will be inadequately achieved, and a move forward in one sector may retard progress in other sectors. Spatial Planning can be of two types:

(i) Adaptive Planning and,
(ii) Developmental Planning.

> **ADAPTIVE PLANNING:**

'Adaptive Planning' is based primarily on recognition of the impact of general trends of development on the spatial system. The task of adaptive planning is then to streamline the process of spatial evolution so as to achieve at any point in time a spatial structure, which matches the needs of industry for efficiency and growth.

> **DEVELOPMENTAL PLANNING:**

"Developmental Planning" on the other hand, sets itself a more ambitious task. Based on the recognition of the interplay and feedback relations between economic development and spatial evolutions, it seeks to identify and achieve within a dynamic and historical context a pattern of evolution of the spatial structure that at any point in time is judged to be most efficient from the point of view of promoting a sustained process of rapid economic development. In this way, the spatial organization of the economic and socio-cultural activity is conceived as a means to promote long-term development rather than viewing spatial organization as something, which should be adapted to existing trends of development.

SPATIAL PLANNING AND REGIONAL DEVELOPMENT:

The concept of Spatial Planning and Development is deeply concerned with the future of man in a given region or a country (Praksha Rao, V.L.S., 1964). It assumes that the future of man lies in the way, he manipulates his environment and in his motivations for doing so. That is to say, his past actions will determine his future. The present is always at the crossroads between past and future and gives him the opportunity to amend the mistakes of the past and to shape a new future.

Development is after all a multifaceted phenomenon, it can neither be understood, nor promoted unless it is seen from interdisciplinary and holistic perspectives. Moreover, development is basically a human enterprise and therefore, it requires the combined efforts of all systems of knowledge, be they physical, biological, social or human to comprehend and articulate it. Planning must draw upon all relevant disciplines including physics on the one extreme and linguistic on the other. Regional Development Planning is not merely a disaggregated version of National Development.

Regional Development Planning is a tetraploid discipline unable to find a core and direction, and hence, a meaning which can be related to human destiny in clear terms (Wanmali, S., 1968). Development is not economic growth alone. It has emerged as a

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paradigm of research in geography in general and regional planning in particular. The basic idea is that development has to be in consonance with nature, which means, well within the carrying capacity of regional environment. The world today is characterized by the lopsided socio-economic development manifests in the spatial arrangement of human activities, which are uneven both in time and space. The inequalities of income and wealth between the rich and the poor, between the privileged and the deprived, and between developed and underdeveloped are the burning issues and challenges of our times. Both developed and underdeveloped countries are gripped with the problem of regional inequalities and imbalances.

The third five year plan proposal in INDIA, as in the case of under developing countries showed a serious approach to the problem of balanced regional development and clearly enunciated policies and programmes intended to reduce "existing disparities in levels of development in different regions and to spread" the benefit of industrialization evenly between the different parts of the country (Bhatt, L.S., 1976). The plan stated that these objectives could be achieved through the balanced and coordinated development of the industrial and agricultural economy of each region, and through planned urbanization and the development of the economic and social services. It stressed the importance of (a) carrying out systematic surveys to identify the problems of different regions (b) careful watching of progress in different regions and taking steps to speed up development in areas found to be lagging seriously behind, and (c) the need for balance between national and regional development. Among the various programmes to promote balanced regional development some are:
(i) The Community Development Programme.
(ii) The Industrial Estates Programme.
(iii) The Intensive Development Programme for Agriculture.
(iv) The Development Programme for Tribal Areas.

The new programmes have been credited with the initiation of a "Green Revolution" in India. The new seed-fertilizer technology, which has increased the yields of crops like wheat and augurs well for other crops is based towards irrigated areas and appears to do better on farm, which can take advantage of economies of scale.

For this, planning should be brought at the regional and local levels. During this process, an attempt should be made to establish interdependent, well-knit and complementary economic and social organization systems, which will serve the present as well as the future needs of the country. Changing the spatial structure of human activities with respect to the spatial hierarchy of planning units, identified on the basis of spatio-functional realities, will also constitute a significant step in the process to bring the planning to the regional and local level and coordinating it with national plan (King, L.J., 1962).

STRATEGIES FOR RURAL DEVELOPMENT:

The Expert Group meeting (EGM) held at Nagoya, Japan from 23rd to 26th August 1980, deliberated on the "Regional Development Alternatives in Predominantly Rural Socities" and listed the following strategies being used to handle the problems of rural development in different parts of the world with special reference to INDIA:
(i) The Urban Industrial Approach and The Growth Poles.

(ii) The Agricultural Development Strategy and Direct Input to Rural Areas.
(iii) Basic Needs and Target Group Approach.
(iv) Integrated Rural Development and Service Centre Strategy, and
(v) The Agro-Politan Approach.

The first two are the " Centre-Down Approach" while the rest are the "Bottom-Up Approach". The urban industrial growth and growth pole approach instead of liquidating the problems of rural areas promoted urban capitalism. Hence, the 'agricultural development' and 'direct input approach' was adopted with a view to tone up the process of intensive agricultural development, rural industrialization, provisions for infrastructure and land reforms. The basic needs and target group approach aimed at fulfilling the basic needs ensuring job opportunities, increasing income and living standard of the weaker sections of the society.

The 'Integrated Rural Development and Service Centre Approach' (IRDSCA) have been acclaimed as a most effective instrument of rural transformation and change, as it lays emphasis on the intensification of agriculture and agro-based industrialization. Local participation and self-help and self-reliance rural development act as an anti-thesis to Growth Pole Strategy. Among the important planners and academicians who have made valuable contribution to the conceptual and applied aspects of these development strategies are 'Friedmann' (Friedmann, J., 1964), 'Learmoth' (Learmoth, A., 1959), 'Wood'(Wood, J., 1985), 'Hermansen' (Hermansen, T.,1969), 'Mishra' (Mishra, R.P. 1976), 'Rao' (Rao, V.L.S.P., 1963), 'Chatterjee' (Chatterjee, S.P., 1940), 'Wanmali' (Wanmali, S., 1967), 'Ahmed' (Ahmed, E.,1955), 'Sen' (Sen, L.K., 1972), 'Bhatt' (Bhatt, L.S., 1964), 'Mishra' (Mishra, B.N., 1989), and 'Sundaram' (Sundaram, K.V., 1977).

LOCATIONAL THEORIES OF SPATIAL PLANNING:

Here, in this section, we attempt to review the relevant theories and concepts about the organization of space. Such a review will help in evolving an appropriate strategy for Regional Development Planning. Developmental Process is marked by two concomitant, but opposite spatial tendencies i.e. Concentration and Dispersion. "Concentration" leads to point-location or clustering of human activities whereas, "Dispersion" brings about an even spread of such activities. The spatial arrangement of human activities at any point in time is the net result of the relative strengths of the processes. As concentration increases, the dispersion process is weakened (Hagerstrand, T., 1952).

According to 'Hirchmann', there can be little doubt that an economy to lift itself to higher income levels must and will first develop within itself one or several centres of economic strength. Furthermore, inter-regional inequality of growth as an inevitable concomitant and condition of growth itself. He assumes that other things remain the same and that the central core (towns) will always have their activities linked with the periphery or the transitional zones. Taking these natural tendencies of concentration and dispersions as points of departure, attempts have been made to formulate concepts and theories of spatial organizations and socio-economic development. Here, some of these are briefly mentioned:

> **VON THUNENS CONCENTRIC RING MODEL:**

A forerunner of the theorists, who has attempted to explain the organization of space through a workable model. In constructing his model, he used 'Mecklenberg', an organizational region of Germany as a Guide. This region was endowed with good land resources, but had extremely poor transportation linkages. He attempted to construct a theoretical model of land-use pattern, given a particular arrangement of towns and villages in a situation expressed in Mecklenberg (Von Thunen, J.H., 1966). He assumed that :

(i) Quality of land was uniform.

(ii) Farming was conducted rationally.

(iii) Transport network in the region–both roads and navigational canals was poor and the cost of transport increased at a constant rate, and,

(iv) Large town existed in the centre of the agricultural land that had no counter magnets in its vicinity.

On the basis of the above-mentioned assumptions, he constructed a model of land utilization having a number of concentric belts around each town. The final model was conceived as consisting of a number of concentric rings around the town, each ring specializing in the production of those agricultural commodities for which it was best suited.

The catalytic factor in Von Thunen's model was transport cost and the most unrealistic assumption was the existence of an "isolated estate"; the term used in his concept. He was the first to recognize the influence of economic factors on the spatial organization of agriculture. His ultimate aim was to boost production. Distance from the market proves to be crucial factors in the evolution of the classic "Thunanian Land Use Circles". His primary achievement was to point out that transport costs determined the location of agricultural activities and to project the consequences and differentiations of dairy, vegetable, forest and crop production according to distance from the market. His model provided a framework for location theorists like 'Weber' (1909), 'Hoover' (1936) and 'Losch' (1948) (Losch, A., 1954) for a more refined and modern analysis. The basic difference between the original Thunen Model and the present situation in villages is that, in the Thunen model, the production unit can be considered to be at one location and at a single distance from the market. Thunen's agro spatial model can no longer be operative in its original format.

> **CHRISTALLER'S CENTRAL PLACE THEORY:**

Christaller was the greatest among the Von Thunen's "students" and his Central place theory inspired as it was by the "isolierte Staat" remains even today unsurpassed as a coherent model of the spatial organization of the service activities of man. His work was originally published in 1933 in South-Germany. Christaller discovered that there is some ordering principles governing the distance of towns and cities (Christaller, W., 1966). A "Central Place" is defined as 'a settlement providing services for the population of its hinterland and supplying it with goods and services'. Central place vary in importance. Depending upon the central functions performed by them and the population served they can be classified as "Higher Order Centre" or "Lower Order Centre". Higher Order Centres stock a wide array of goods and services and serve a large population

whereas, smaller order centres stock a smaller range of goods and services and serve a smaller population. For this, there are certain "Basic Assumptions" like:

(i) An isotropic surface – continuous growing unbounded plain.

(ii) An even distribution of rural population on the isotropic surface.

(iii) Triangular distribution of population centre (means clusters of populations, settlement etc.)

(iv) There is a market range to each function.

(v) A population threshold for each function, and

(vi) A constant spatial behavioural pattern or parameters of population.

In Christaller's model each of the goods is characterized by its own spatial range, determined by scale economies, transportation cost, consumer preferences and relative spatial friction, and plants producing goods of the same range will be located at equal distances from one another like corners of a lattices of equilateral triangles.

Centres are located at the apex of the hexagon. Marketing system is the k=3 system, where k value signifies the number of dependent centres on a next higher order centre. It provides maximum marketing services to all the lower order centres. The number of dependent centres on a centre of a particular order can be found out by following equations.

$$D_x = K_x$$

Whereas, D_x = No. of dependent centres at a particular order.

K = type of hierarchy

x = means the rank (whether 1,2,3...7).

K = 4 system is the Transport system on Traffic Principle whereas,

K = 7 system stands for the Administrative system in which lower order centres are fully under the control of higher order centres on sphere of influence.

➢ THE LOSCHIAN CONCEPT OF ECONOMIC LANDSCAPE:

Losch built a hierarchy of Central Places starting from the lowest order and incorporating non-service activities in its functions (Losch, A., 1954). He did not specify the number of lower order centres, which can be served by a next higher order centre, nor did he put limits on the size of markets. The resulting clustering of spatial activities and the inter-relation among them, through various sizes of central places in the 'Loschian' model will be: -

(i) One superior centre where all goods are produced.

(ii) There is a real specialization, division of labour and trade between centres; i.e. smaller centres supply larger centres with their specialized products.

(iii) A concentration of centres in "city-rich" sectors separated by interstitial sectors, which are less densely packed with centres.

(iv) Nothing can, without further assumptions, be said about the relative sizes of centres, except that the superior one will be larger than all others. Centres with the same number of functions do not necessarily provide the same kind of functions.

(v) Assuming that size of centres is proportionate to the number of plans, it can be shown within "city-rich" sectors, the size of centres increases with distances from the central place and that smaller centres tend to be located about halfway in between larger ones.

(vi) Although 'Losch' asserts that the vertical organization would be hierarchical, this is doubtful, and can't be proved without future assumptions.

On the contrary, it seems to follow from the model that the size distribution is continuous. 'Losch' treated the smallest nucleated agricultural villages located in a uniformly distributed nucleated population as his starting point. As one of these villages embarks on some sort of manufacturing activity, it seeks a market outside. Eventually, it will have a hexagonal market area. If the production of non-farm goods further expands it will invade the area of influence of other competing production centres either by rotating the hexagon or by enlarging it, or by both.

There is no hierarchy of Central Places, but rather a moving equilibrium of locations under perfect competition and hence free entry conditions (Brush, J.E.,1953). 'Losch' considered the size of the hexagon not only in relation to a geographical centre, but also and perhaps more importantly in relation to the goods produced. Thus, a particular centre may have several hexagonal markets for its different products. The inter-linkages among the industries will however generate tendencies for those various hexagons to converge to a single point, thus giving rise to a system of producing centres.

➢ GROWTH POLE HYPOTHESIS: (BY PERROUX, 1955):

The idea of Growth Pole has been put forwarded originally by 'Perroux' (Perroux, F., 1955) in 1955. He conceived of abstract economic space, which consists of a number of centres, poles, or foci from which centrifugal forces emanate and to which centripetal forces are attracted. But 'Perroux' (Perroux, F., 1955) was not very explicit in his statement of the theory. A fresh interpretation to his theory was made by 'Boudeville' (Boudeville, J.R., 1966), who considered Growth Poles as the centres, which exert their considerable impact over a vast area called the 'Umland' or the 'City Region'. In India, 'Mishra' (Mishra, R.P. & Shivalingiah, M., 1970), has advocated the idea of Growth Pole scheme. He has explained the concept and the part played by Growth Pole in the development planning. The concept presupposes the development into a systematic order and the 4 tiers of hierarchy in the descending order according to him are:
(i) Growth Pole,
(ii) Growth Centres,
(iii) Growth Points, and,
(iv) Service Centres.

These are 4 institutions, the infrastructure of which will provide fresh channels of communication for the smooth flow of industrialization in any region. Such a network will apparently witness the decentralization of socio-economic services and will promote an atmosphere for better marketing facilities for rural folks. The Growth Pole or large city will be the regional capital and the growth centres or the intermediate towns will acts as a joining links between the Growth Pole and the Growth Points. The Growth Points or small towns or service centres at the lowest rung of the ladder, on the other hand, will have a closer links with the villages. The growth pole, growth centers, growth points, service centres and villages are organically and functionally linked presenting a complete integration of the region. Such a system of integration generates a chain reaction in the development of a region. In the sphere of influence of a Growth Pole there are a number of growth centers, growth points and service centres and they participate in the socio-economic change of a rural society.

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STATEMENT OF THE PROBLEM:

SHAHGANJ Tehsil, one of the emerging trade centres of Jaunpur District is a developing tehsil of Eastern Uttar Pradesh. In its general aspect, the tehsil is built on low grounds with the water level being close to the surface and is surrounded on all sides by rice fields, though to the northeast, there are a number of good groves. The lack of infra-structural facilities, poverty and the socio-economic backwardness has long been a curse of this tehsil. Although it is very poor in mineral resources, but possesses a variety of land, water agricultural and man power resources and potentialities for the industrialization. These resources were left unexploited until the last 2 decades owing to the dearth of required development infrastructure and the negligence of the government. It was only during the nineties that the government became conscious of the vast natural resources, thereby, launching a variety of intensive development schemes and crash programmes to utilize the resources to its best possible extent. Under these multi-faceted schemes, a few industrial units have been installed, which have given employment to the local people resulting in the improvement of their socio-economic conditions. Still, a lot remains to be done to effectively streamline and accelerate the pace of agricultural, industrial, education, medical and health, civic amenities, input facilities, goods and commodities, marketing facilities etc. to the people of the area, so that they may join the mainstream of national development in general and may get rid of the mire of poverty, deprivation, and destitution in particular.

A sizeable portion of the Tehsil's population lives in remote areas, which have been ignored for long and lack in basic infrastructure and service facilities. As a result, the agricultural sector is at primitive subsistence stage. The Industrial and Social sectors are also in morbid state.

Hence, integrating the process of development with the spatial network of service centres will not only accelerate the mobility and efficiency of the people and the accessibility and serviceability of the study area, but will also ensure adequate infrastructure, optimum provision of service facilities and maximum interaction between different centers, areas and people which will result into the overall development of the study area.

OBJECTIVES OF THE STUDY:

The study seeks to investigate the various facets of the spatial, social, economic and cultural set up and to bring out the practical problems and realities of the study area. It seeks to provide a comprehensive framework for the regional development and planning of Shahganj Tehsil. To present regional development, this research project has several broad objectives, which are mentioning below:

(i) To study the concept of development and provide proper planning in the study area.

(ii) To assess the extent of regional imbalances and ensure proper planning to eradicate them.

(iii)To identify the existing network of the service centres in the tehsil along with their sphere of influence and to test their validity for using them as planning units for agricultural, industrial, social services, health and educational development.

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(iv) To provide proper planning for development in the field of agricultural development, industrial development, and development of social services, health and medical facilities in today's world.

HYPOTHESIS AND METHODOLOGY:

The following hypothesis shall be tested in course of this regional development planning research project:
(i) That there is a close correspondence between the spatial systems and the process of development in the study area.
(ii) That, there is order in the spatial and functional systems in the area.
(iii) That spatial hierarchy expresses itself into a functional hierarchy in the process of development.

METHODOLOGY:

The completion of the present work is positively a stupendous task, which required a lot of work like the review and collection and consultation of the concerned literature, collection of primary and secondary data, formation of hypotheses, field investigation and processing and mapping of the data. To make this task easier, the whole work has been divided into following three parts:

(i) LIBRARY WORK:

The regular study made in the library served the dual purpose:
(i) It helped to thoroughly review and consult all the available literature related to the research topic.
(ii) It also helped in the collection of the secondary data from various published sources i.e. District Gazzetter, Census-Hand Book, Town-Village Directory of Jaunpur District, District Statistical Bulletins, District Annual Plan Bulletins, Meterological Tables and Geological Survey of India Report and District Industrial Bulletins. The review of literature was made with the help of a number of books, journals and research thesis and project reports. In this way Library work abundantly contributed to formulating the conceptual theme of the present study.

(ii) THE FIELD WORK:

The exhaustive fieldwork was undertaken to collect primary data to verify statistical information, to make on-the-spot survey and information collections, by a questionnaire and to make the general field observations of the area. In addition, the information regarding some original maps viz. maps of consumers' behaviour pattern were also derived during the field investigation and enquiries.

(iii) THE LAB WORK:

It includes the calculation and processing of data and mapping the results. A number of maps and diagrams were finally prepared in the laboratory for the completion of the thesis.

In this way the project report was completed after a lot of physical and mental hard labour.

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CHAPTER TWO

ELEMENTS OF SPATIAL PLANNING: AREA ANALYSIS

	Introduction	
	Historical Background	
	Geographical Position	
	Physical Features (Relief, Drainage etc.)	
	Climate	
	Soil	
	Minerals	
	Cultural Features (Pop., Sex, Literacy etc.)	
	Agriculture	
	Settlement	
	Industries	
	Transport and Communication	

INTRODUCTION:

The site and situation are by far the most important physical factors affecting the growth and morphology of any area or region. "Smailes" points out "it is the condition of the site, which have special importance in localizing the original function at particular spot fixing there the nucleus. For its subsequent growth in size and for enhancement of its functions, the wider setting or situation has its greater importance".

The 'site' closely corresponds to the area actually occupied by the region and the 'situation' refers to the wider area surrounding a particular region. "Dickinson" remarks: "The site embraces the precise features of the terrain on which the settlement began and over which it has spread". Apparently, the site, thus, forms the part of the wider physical setting of the region"(Mishra, H.N.).

HISTORICAL BACKGROUND:

'Shahganj' owes its origin to shuja-ud-duala, who built here a market place, a Baradari, now used for a school and a Daragah in honour of Shah Hazarat Ali and from this comes the name of the town itself, which is found in Region VII of 1795, and of its three Mohallas i.e. Shahganj, Aliganj and Hussainganj are derived. Shahganj, is now one of the chief trade centres of Jaunpur District. Jaunpur, itself had an important historical background. In ancient period the district constituted an integral part of the kingdom of Koshala and Vatsa (Dutt, N. and Bajpai, K.D.,1956). According to the Hindu Mythology, the name of 'Jaunpur' is derived from Jamadagni Rishi, who used to live at the right bank of the Gomati river about half way between Jaunpur and Zafarbad (Nevill, H.R., 1908). Primarily, this place was named after Jamadagni Rishi and was known as 'Jamadagnipur', which later came to be known as Jaunpur (Cunningham, A., 1980).

The specific reference of its name is found during the time of Feroz Tuglak. He founded this place in 1359-60 A.D. in honour of his cousin 'Juana' (Mohd. bin-Tuglak) and commemorated his memory by naming the city after him (Prasad, I., 1928). At present, people call this city 'JAUNPUR'. Originally, 'Jaunpur' was one of the 4 sirkars included in the provinces of 'Benaras' when the later was ceded to the East India Company in 1775 the nawab-wazir. It was not till 1818 that the four tehsils Jaunpur, Haveli, Ghiswa and Machhlisahar came into being.

At present, the district has 6 subdivisions i.e. Shahganj, Machhlisahar, Jaunpur, Mariahu, Kerakat and Badlapur each forming a tehsil of the same name.

GEOGRAPHICAL POSITION:

The tehsil of Shahganj is situated between the $25^0 40$ North and $26^0 12$ North Latitude and $82^0 27$ East and $82^0 42$ East Longitude at a distance of 35 km north of Jaunpur. It lies in the Northern part of the district. It is bounded on the north and northwest by the district of Sultanpur, on the east by district of Azamgarh, on the South by district of Jaunpur and on the southwest by the district of Pratapgarh. (Fig 2.1).

It owes its origin to Shuja-ud-daula, who built a market place here, a 'Baradari' and a 'Dargah' in honour of Shah Hazrat Ali from, which is derived the name of the town. It is situated on the metalled road from Jaunpur to Faizabad. The metalled road leads northeastwards to Azamgarh and a second metalled road leads to Kadipur in

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SHAHGANJ TEHSIL
ADMINISTRATIVE UNITS

km

STUDY AREA

S U L T A N   P U R

D I S T R I C T

Gairwah

Kopa

Deeh Asharfabad   Sawayan   Aitsya   Jamdara

Mayari

Burhkahan

SUTHAKALAN   Suthal Kalan   Mohuddin pur   Baragaon   Takhapuawa

Samadhpur   Shahmau   Dehri   Tisauli   Bhadi

Patti Narendra pur   Nizmapur   SHAHGANJ

Patata

Soubiya   Sabarhad

Dihiyan   KHUTAHAN   Bhagmalpur   Ranimau   Para Karnai

Khutahan   Kheta sarai

Marahat   Sendi   Jamadahan

Rudhauli

Tikri

Mubarak pur

Baraur   Mani Kalan   Barangi

Chhataura

Meharawan   Khalilpur

Kuhiyan

D I S T R I C T   A Z A M G A R H

T A H S I L   B A D L A P U R

J A U N   P U R

DISTRICT BOUNDARY

TAHSIL BOUNDARY

VIKASH KHAND BOUNDARY

NYAYA PANCHAYAT BOUNDARY

● TAHSIL H. Q.

◉ VIKASH KHAND H.Q.

● NYAYA PANCHCHAYAT H.Q.

Figure 2.1

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Sultanpur district. It is connected by rail from Faizabad and Varanasi. It has also joined by the meter gauge branch line of northeastern railway with Azamgarh (Table 2.1).

Shahganj Tehsil spreads over an area of 706.63 sq. km and has been administratively divided into three-development blocks viz. Suithakala, Shahganj and Khutahan.

According to 1991 census there are overall 548 Revenue Villages with 508 inhabited and 40 uninhabited villages. Shahganj being a municipal area, contains a total of 318 Gram Sabha, 40 Nayaya Panchayats and one town.

TABLE 2.1

ADMINISTRATIVE ORGANISATION OF SHAHGANJ TEHSIL-2000

S.NO	BLOCKS	AREA (IN SQ.KM)	NAYAYA PANCHAYAT	GRAM SABHA	INHABITED VILLAGES	TOTAL VILLAGES
1.	SUITHAKALAN	235.09	12	94	144	152
2.	SHAHGANJ	237.49	16	120	178	203
3.	KHUTHAN	234.05	12	104	186	193
	TOTAL	**706.63**	**40**	**318**	**508**	**548**

SOURCE : Statistical Bulletin, Jaunpur District, 2000

PHYSICAL FEATURES:
STRUCTURE AND RELIEF:

Shahganj is a part of the middle Ganga plain, which signifies a vast alluvial stretch between the foothills of siwaliks in the north and southern hills and plateaus in the south. So, in its general aspect the study area may be described as a level plain, with slight undulations caused by the valleys of the rivers. The vast alluvial plains were originally an elongated depression between the Gondwana land and the Himalayas. In the Pleistocene and sub-recent periods, it was filled up with a huge quantity of alluvial sediments brought down by the numerous rivers from the Himalayas resulting into a level plain with very gentle seaward· slope (Singh, R.L., 1968). The main drainage channel via the Gomati, the Sai, and the Bisuhi divide the district into four almost parallel strips each with fairly distinct physical characteristics: (i) The Northern (ii) The Gomati and Sai Khadar (iii) The Central tract and (iv) The Southern tract.

The first and the largest northeastern tracts lies to the north of the Gomati extending from the Sultanpur border on the north to that of Ghazipur to the southeast. It may be sub-divided into two portions of which the largest is the 'usar' land comprising Shahganj and Jaunpur Tehsils, and the other one, which is adequately irrigated, consists of the greater part of Kerakat Tehsil (Fig 2.2).

DRAINAGE:

The chief river of the area is the Gomati, next in importance are its tributaries, the Sai and the Mangar. The other useful streams of importance are the Barna and the Bisuhi, which unite in the extreme south and eventually discharge their water into the Ganga.

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SHAHGANJ TEHSIL
DRAINAGE PATTERN
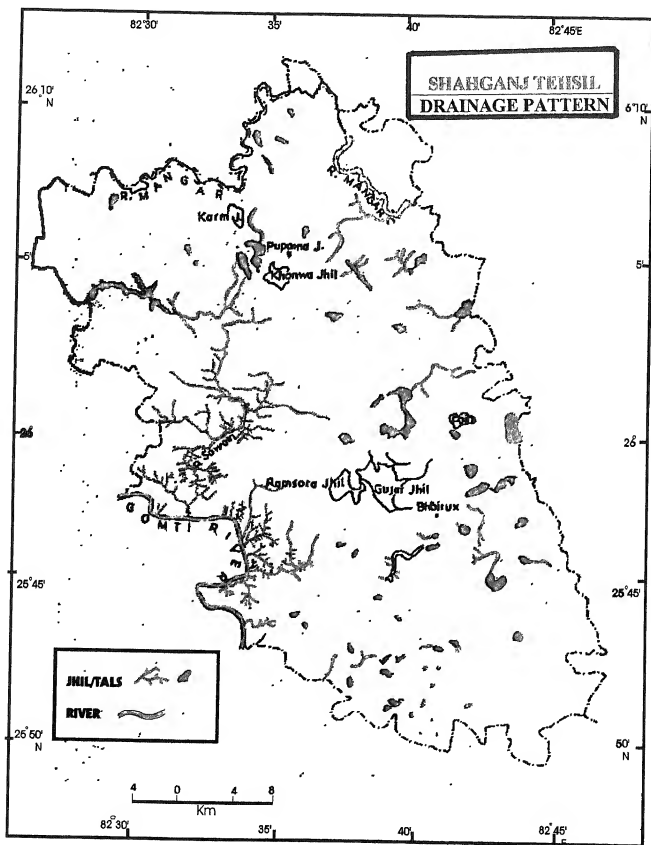
Figure 2.2

The Gomati joins the Ganga on the left side. The Gomati and its main tributary, the Sai, run almost parallel to the Ganga before Sai joins the Gomati. But afterwards only a few kilometers away from this place, it merges with the Ganga River. The study area is almost a level plain with no features; it is situated at 87.5 mt. in the East and 83.1 mt. in the South above the sea level. The main rivers are River Gomati, River Mangar and River Sai.

Besides, there are numerous lakes in the tehsil, especially in the northern and in the southern-west. The chief lakes are Qamarpur, Ramnagar, Khonwa, Pupaina in Khuthan Tehsil, Lawain and Gujar Tals in Shahganj Tehsil and Saida Tal in Suithakalan Tehsil (Fig 2.2).

CLIMATE:
The climate of Shahganj Tehsil is, more or less, similar to other districts of Eastern Uttar Pradesh. According to the climatic classification, it lies in the northern sub-continental interior of the sub-tropical climatic belt. As a result, it is moist and relaxing, except in the summer and cold seasons. However, the study area enjoys the typical monsoon climate, which is by and large, directed and controlled by the pressure conditions prevailing in the central and South-East Asia. This climate of Shahganj Tehsil falls under Koppen's "cwg", and Thornth-waites' "CAW"and Trewartha's "caw" climatic region. Accordingly, the tehsil has 4 distinct seasons:
(i) The Hot Summer Season (from March to Mid June).
(ii) The Rainy Season or Monsoon Season (from Mid June to September).
(iii) The Post Monsoon or Transitional season (from October to Mid November).
(iv) The Cold Winter Season (from Mid November to February).

(i) THE HOT SUMMER SEASON:
After winter season the temperature increases gradually. During the day the temperature rises rapidly from the beginning of the March. June is usually the hottest month with the maximum temperature at about 41^0C (105.8 F) and the minimum at about $28\,^0$C (78.8 F). Summer heat is intense and the maximum temperature on individual days may go upto 47^0C (116.6 F). The days from April to mid June are dust stormy, sunny, scorching and uncomfortable, but the nights are relatively cool and pleasant. Relative Humidity in the afternoon is very low, being less than 30 percent (Table 2.2).

TABLE 2.2

DISTRIBUTION OF TEMPERATURE (IN DEGREE CENTRIGRADE)
SHAHGANJ TEHSIL – 2000

S.NO.	MONTHS	MAXIMUM TEMP.	MINIMUM TEMP.	TEMP. DIFFERENCE	AVERAGE TEMP.
1.	JANUARY	24.10	8.94	15.16	16.52
2.	FEBURARY	25.54	9.96	15.58	17.75
3.	MARCH	33.03	16.46	16.57	24.75
4.	APRIL	39.46	21.96	17.75	30.71
5.	MAY	39.91	24.65	15.26	32.28
6.	JUNE	40.84	27.48	13.36	34.16

7.	JULY	35.80	26.57	9.23	31.85
8.	AUGUST	34.20	26.27	7.96	30.24
9.	SEPTEMBER	33.41	24.59	8.89	29.00
10.	OCTOBER	33.06	20.45	12.61	26.76
11.	NOVEMBER	29.71	14.72	14.99	22.22
12.	DECEMBER	25.74	9.74	16.00	17.74
		32.90	19.32	13.58	26.11

SOURCE : Nazir Office, Jaunpur District, 2000

(ii) THE RAINY SEASON:

With the advance of the monsoon by the middle of the June a giant cyclonic conditions fully develops over the northwestern part of India resulting in a drop in the day temperature, but the nights continue to be as warm as during the latter part of the summer. The region experiences the bursting of Monsoon towards the last week of June. Winds are totally humid, resulting in abundant rainfall. In this season clouds are always present in the sky. Mean monthly temperature in June ranges between 34.16^0C and in July 31.85^0C. The diurnal range of temperature gradually decreases from 13.36^0C in June to 7.9^0C in August (Table 2.2). It gradually rises again to about 12.61^0C in October. The relative humidity varies from 75-85 percent in the rainy season (Table 2.3). This season receives about 89 percent of the annual rainfall in the district. The months of July and August jointly account for about 50 percent of the annual total rainfall and are the rainiest months in the Tehsil (Fig 2.3).

TABLE 2.3

DISTRIBUTION OF RELATIVE HUMIDITY (IN DEGREE CENTRIGRADE)
SHAHGANJ TEHSIL – 2000

S.NO.	MONTHS	TIME : 0.830 HRS. (IST)	TIME : 1730 HRS. (IST)
1.	JANUARY	81	50
2.	FEBURARY	75	55
3.	MARCH	58	21
4.	APRIL	46	18
5.	MAY	48	20
6.	JUNE	66	40
7.	JULY	93	80
8.	AUGUST	86	75
9.	SEPTEMBER	84	57
10.	OCTOBER	80	51
11.	NOVEMBER	79	43
12.	DECEMBER	81	49

SOURCE : Nazir Office, Jaunpur District, 2000

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SHAHGANJ TAHSIL

SOME ELEMENTS OF CLIMATE

(A) TEMPRATURE AND RAINFALL
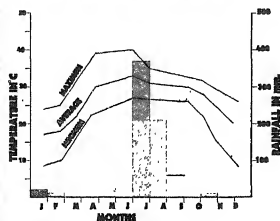
(B) TEMPRATURE AND AIR PRESSURE
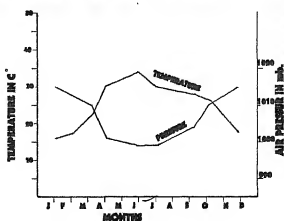
(C) TEMPERATURE AND RELATIVE HUMIDITY
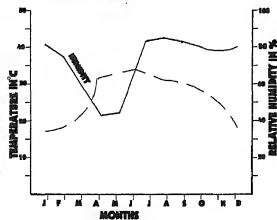
(D) HYTHERGRAPH SHAHGANJ
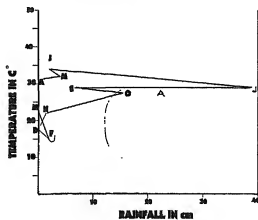
Figure 2.3

(iii) THE POST MONSOON OR TRANSITIONAL SEASON:

This season marks the period, when the rainy season is about to end and the winter season is about to set in. So, this is called the transitional season. Due to low temperature weather is usually cold in the study area. The average temperature ranges between 26.76^0C in the month of October to 22.2^0C in the month of November (Table 2.2). The air pressure around the year varies from 998.5 MB in June to 1016.8 MB in December (Table 2.4).

TABLE 2.4

DISTRIBUTION OF AIR PRESSURE (IN MILIBAR)
SHAHGANJ TEHSIL – 2000

S.NO.	MONTHS	AIR PRESSURE (IN MB.)
1.	JANUARY	1016.4
2.	FEBURARY	1013.0
3.	MARCH	1010.0
4.	APRIL	1001.0
5.	MAY	1005.5
6.	JUNE	998.5
7.	JULY	998.6
8.	AUGUST	1001.0
9.	SEPTEMBER	1004.0
10.	OCTOBER	1010.0
11.	NOVEMBER	1014.2
12.	DECEMBER	1016.8

SOURCE : Nazir Office, Jaunpur District, 2000

(iv) THE COLD WINTER SEASON:

After post monsoon or transitional season the temperature decreases gradually. Low temperature and high air pressure characterizes this season. The weather has generally characterized by clear sky, low humidity and low temperature, fine weather and light northerly wind and a large diurnal range of temperature (Freemann, T.W., 1968).

The monsoon begins to retreat in September resulting into slight increase in day temperature. With the withdrawal of the monsoon in the early October the temperature gradually start decreasing. January month is generally the coldest month with the mean daily maximum temperature of about 24^0C and mean daily minimum temperature of about 9^0C. The percentage of relative humidity to this season varies from 75 to 85 percent in the study area. January experiences an average monthly temperature of 16.5^0C and diurnal range of temperature varies from 14.9^0C in November to 16^0C in February, which is illustrated by table (Table 2.2) and a figure (Fig 2.3).

DISTRIBUTION OF RAINFALL:

About 90 percent of the rainfall in the Tehsil is caused by the wet monsoon coming from the Bay of Bengal between June and October. However, the intensity and the amount of rainfall vary over space (Fig 2.4). The average annual rainfall in the tehsil

29

SHAHGANJ TEHSIL
DISTRIBUTION OF TEMPERATURE

Figure 2.4

30
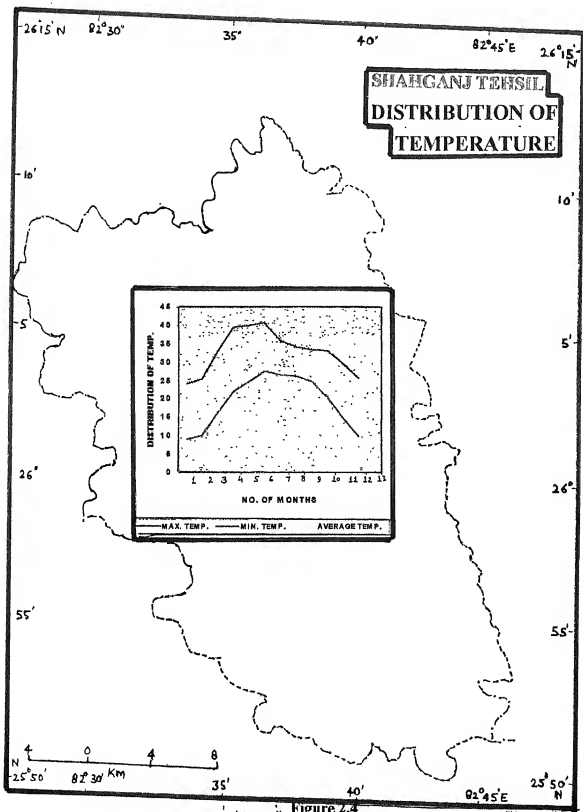
has been 858.2 mm (34.35"). The variation in the rainfall is appreciable from year to year. About 89 percent of the annual rainfall in the tehsil is received between June to October. In the fifty years period the highest rainfall was recorded in 1948 which was 147 percent of the normal, while the lowest came down to only 54 percent. On an average, there are about 50 rainy days in a year. The heaviest rainfall in 24 hours was recorded at Mariahu centre on 19th July 1955 (370.8 mm) (14.83") (Fig 2.4 and 2.4-A) and (Table 2.5).

TABLE 2.5

DISTRIBUTION OF RAINFALL (IN MM.)
SHAHGANJ TEHSIL – 2000

S.NO.	MONTHS	RAINFALL (IN MM.)
1.	JANUARY	7.0
2.	FEBURARY	4.0
3.	MARCH	0.0
4.	APRIL	0.0
5.	MAY	38.4
6.	JUNE	10.0
7.	JULY	386.5
8.	AUGUST	210.9
9.	SEPTEMBER	57.6
10.	OCTOBER	139.0
11.	NOVEMBER	4.8
12.	DECEMBER	0.0
	TOTAL	**858.2**

SOURCE : District Observatory Record Office, Jaunpur, 2000

VEGETATION:
Shahganj Tehsil is an integral part of the middle Ganga plain, which is deep, fertile and densely populated, so there is no significant forest in the area except the 'dhak' (Butea monosperma) jungles, which are found in almost all parts of the area. The other trees are found in scattered clumps or in the village sites or along the roadsides. Tropical deciduous trees characterize the area and are found scattered. The most usual vegetation comprises the mango; mahua (Madinica Indica); shisham (Dalbergia sissoo); neem (Azadirachta indica); jamun (Sygizium cumini); siras (Albizia lebbeck); pipal (Ficus religious); bargad (Fieus benghalensis); and tamarind (Tamarinindus indica). In rice tract, 'babul' is fairly abundant and, palm trees principally the 'tar' occur in large numbers. Roadside plantation has been done along the main roads and the trees planted are mango, jamun, mahua and neem. The fruit trees, whether planted, or of spontaneous growth are mango, mahua, ber (ziziphus nylocarpus), jack fruit, aonla (Emblica afficinatis), and bel (Aegtemarmelos).

31

DISTRIBUTION OF RAINFALL
IN SHAHGANJ TEHSIL.
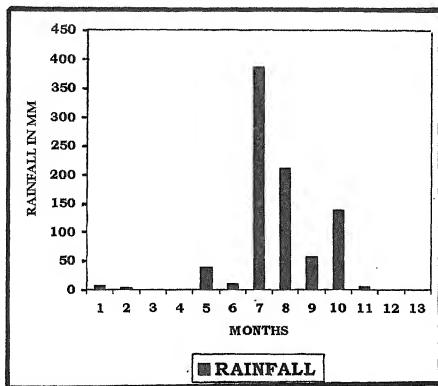
Fig. 2.4-A

Figure 2.4-A

SOIL:

Soil is our prime resource and is undoubtedly the priceless asset of the nation. It is the foundation of our economy and a valuable source of our nation. All our foods and daily necessities are derived directly or indirectly from the soil. A large number of factors (physical and human) are responsible for the development of soil. The parent rock with their geological structure and history, topographic condition, climatic variations, natural vegetation and man's activities together determine the formation and distribution of soils. The tehsil is a level alluvial plain. However, the following types of soils can be identified in the study area, which is illustrated by figure (Fig 2.5 & 2.6)

(i) Clay Soils (Matiyar)
      (a) Bajjar Soil or Chachar Soils
      (b) Karail or Black Soils.
(ii) Loam Soils (Domat).
(iii) Clay-Loams Soils (Mixed Soils).

(i) CLAY SOIL:

The soils consists mainly of domat (Loam) and matiyar (Clay) found in the low lying and depressed areas of the tehsil. This type of soil occurs in several parts of Shahganj Tehsil. Of the total cultivated area, about one-fourth is covered with true clay. Generally known as matiyar soil-a soil with sufficient moisture produces excellent crops but otherwise it is less productive.

There are 2 sub-types - one is 'Bajjar' or 'chachar' which is of grayish color and is stiff low-lying clay with an admixture of gravel. It is very useful for early rice or for nurseries of jarhan paddy. This type of soil is absolutely useless in dry years, because without moisture it is totally useless soils. The other type of soil is 'karail' or 'black soil', which has a large amount of organic matter. It is found in the bed of jhils and dried up tanks. It is extremely sticky and cohesive, when wet, but cracks into fissures when it is dry. It is used for the coarser varieties of late rice and other crops.

(ii) LOAM SOIL:

Found in the higher areas of the study area especially in Arsiya, Sawayan and Suithakalan (Fig 2.5 & 2.6). Loam is known by its common name 'Domat' merely a mixture of clay and sand. It is an excellent soil when irrigated. The higher loams are called 'sagon', - which is about 2/3rd of sand. Such soils together with sand and poor clays constitute one-fourth of the tehsil.

(iii) CLAY-LOAM SOIL:

A mixture of two soils viz. clay and loam. Loam is of course, a mixture of clay and sand, proportion varies with the elevation. Sand by itself is very common and is found only near the channels of the two principal rivers - the Gomati and the Sai. On the higher riverbanks the soil is invariably light and can best be described as a sandy loam. Sandy soils are usually known as 'Balua' soils and are mainly used for the cultivation of coarse crops like millets, arhar and other inferior crops (Fig 2.5 & 2.6).

MINERALS:

The tehsil is very poor in mineral resources. There is no important mineral found in the tehsil. Some mineral type products, the chief one being lime stone conglomerate
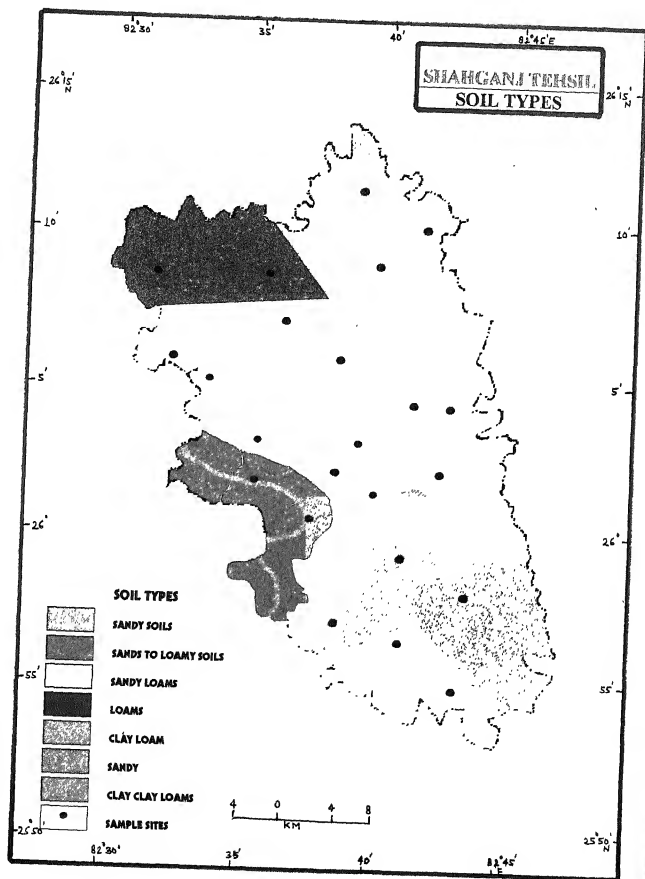
Figure 2.5
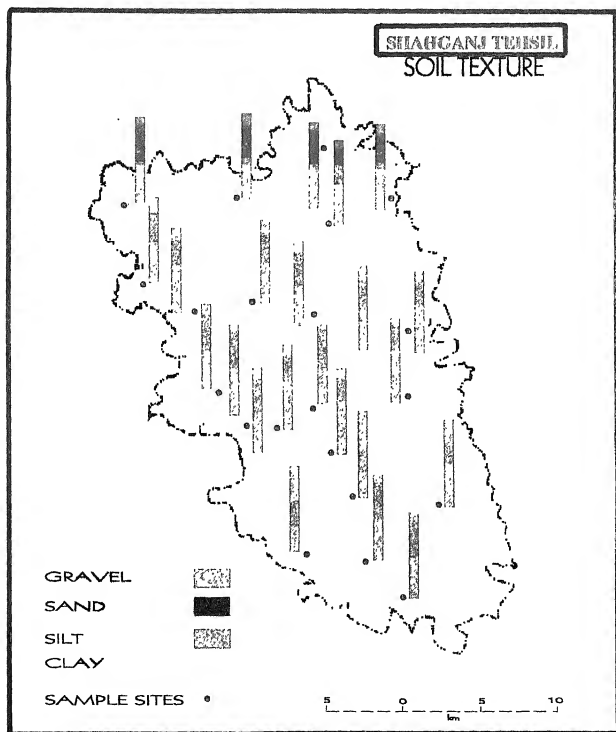
Figure 2.6

POPULATION GROWTH IN
SHAHGANJ TEHSIL

FIG. 2.7

Figure 2.7

SHAHGANJ TEHSIL
DENSITY OF POPULATION

PERSONS/km²

451 - 570

571 - 689

690 - 808

809 - 927

928 - 1046

1047 - 1165

1166 - 1284

Km

Figure 2.8

39
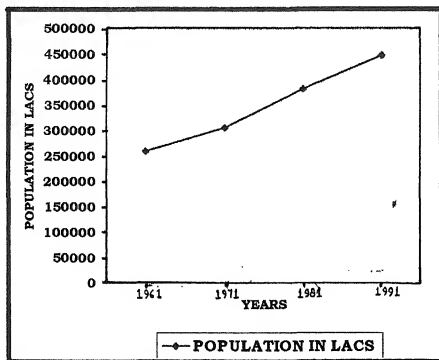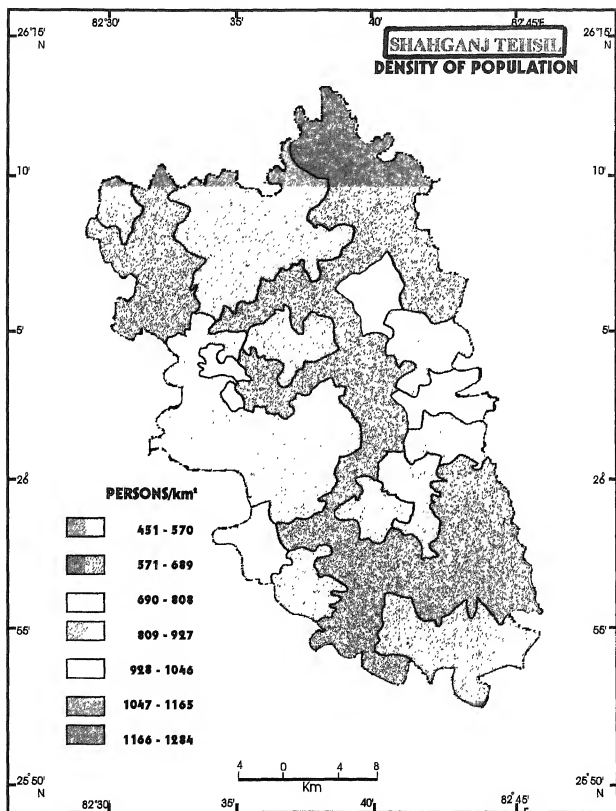
'Population density' means the number of persons living per sq. km in an area. According to the density pattern, there are four categories of Nyaya Panchayats. The First, category ranges from 900 persons/Km^2 and above includes Radhauli, Deeh Asarfabad, Khetasarai and Pataila Nyaya Panchayats. The second, category ranges between 800-900 persons/km^2 and includes Nhadi, Parakomal, Patti Narenderpur, Deehiana, Khuthan, Marhat and Chaulthara Nyaya Panchayats. The Third category ranges between 700-800 persons/km^2 includes Mubarakpur, Sabarhand, Baragaon Nayaya Panchayats. The last category ranges between 700 persons/Km^2 and below includes 700-persons/Km^2 and below includes Mayari, Sawayan, Arasia, Jamadare, Bumkahan, and Samodhpur Nyaya Panchayats. The highest density of 1197 persons/km^2 is found in Pataila Nayaya Panchayat while the lowest density of 451 persons/km^2 occurs in Bumkahan Nyaya Panchayat.

SEX RATIO AND LITERACY:

The numerical measurement of sex composition of a population is often expressed in terms of sex ratio. It is calculated differently in different countries. In **'India'**, the sex ratio is calculated in terms of number of females per thousand males. It is calculated as under:

$$SR = \frac{P_f}{P_m} \times 1000$$

where, p_f females - p_m for males

An important characteristic of population in the area is the greater number of females over males as compared to the national average. In several Nyaya Panchayats, the number of females per thousand males is fairly small. The higher sex-ratio in the rural areas is chiefly due to the migration of large number of males to the adjoining industrial and mining centres of West Bengal, Bihar and Maharashtra for employment leaving their families at home. It was observed during the field survey, that the literate persons don't want to live in their houses/villages due to the scarcity of employment opportunities. The sex ratio of the study area averages to about 993 to 964 females per thousand males (Fig. 2.9). The decadal variation shows a slight decrease in the number of females per thousand males. In 1961 the number of females per thousand males was 1033, whereas, in 1991 it came down to 984 as shown in table (Table 2.8) and illustrated by figure (Fig. 2.10).

TABLE 2.8

SEX RATIO IN SHAHGANJ TEHSIL (1991)

S.NO.	YEAR	FEMALES PER 1000 MALES
1.	1961	1033
2.	1971	1025
3.	1981	1011
4.	1991	984

SOURCE : District Census Survey, Jaunpur : 1991
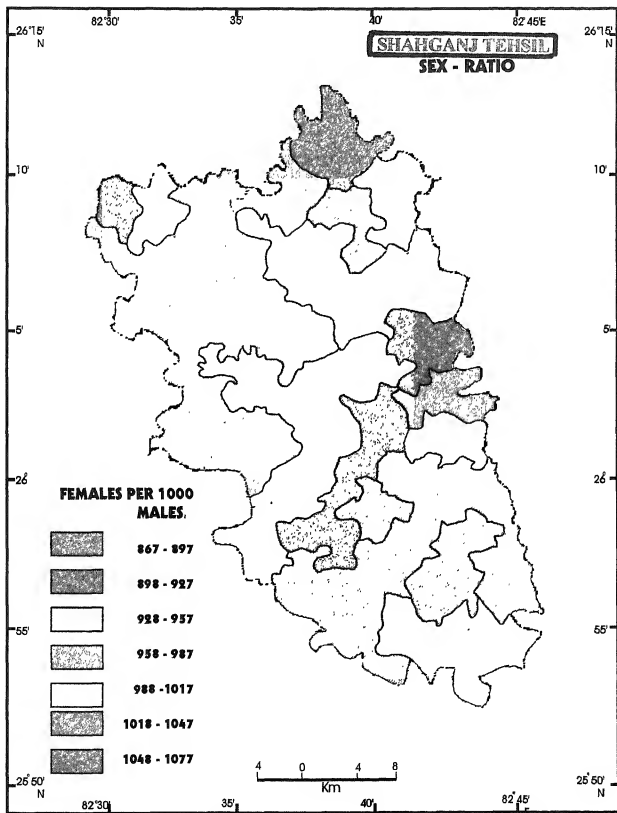
Figure 2.9

DECADAL VARIATION OF SEX RATIO SHAHGANJ TEHSIL
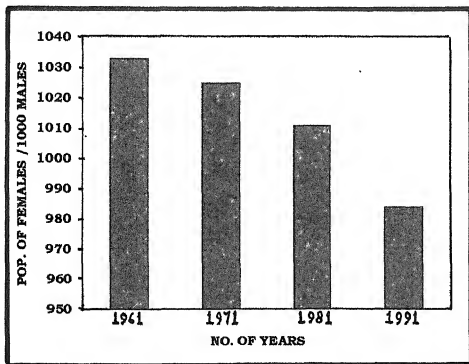
Fig. 2.10

Figure 2.10

The literacy percentage in the Shahganj Tehsil is average to 29.75 percent. In rural areas, it accounts for 31.8 percent while in urban areas it is 48.6 percent. The literacy percentage of male persons is 42.83 percent while that of female is 16.45 percent (Fig. 2.9). The highest percentage of male literate is found in Tisauli having 50.23 percent followed by Takhapurwa having 48.70 percent and Deeh Asarfabad having 48.25 percent whereas, the highest percentage of female literate is found in Patti Narendrapur having 27.45 percent followed by Khetasarai having 24.37 percent and Shahmain having 21.77 percent. The decadal variation shows a sharp rise in male and female literacy rate (Table 2.9). In 1961, the female literacy rate was 5.40 percent whereas, the male literacy rate was 25.59 percent whereas, in 1991, the female literacy rate was 16.45 and male literacy rate was 42.83, which shows a sharp rise in male and female literacy both that shows a sharp rise in male and female literacy both as illustrated in figure (Fig. 2.11 & Fig. 2.11-A).

TABLE 2.9

DECADAL VARIATION OF LITERACY IN SHAHGANJ TEHSIL (IN %) - 1991

S.NO.	YEAR	TOTAL LITERACY	FEMALE	MALE
1.	1961	15.24	5.40	25.59
2.	1971	19.03	7.78	30.14
3.	1981	23.18	10.02	36.35
4.	1991	29.75	16.45	42.83

SOURCE : Town-Village Directory, District Jaunpur 1991

AGE STRUCTURE:

The study area has an age structure of pyramidal shape - a very broad base and a tapering top, which is most common in developing countries. There are three basic determinants of age composition of a population i.e. natality, mortality and mobility. 'Clarke' rightly points out that these three determinants of age-structure are inter-dependent and any change in one of these may influence the other two, and it is through these variables that the socio-economic conditions influence the age-structure. It is the fertility rate that determines the proportion of population in different age categories. This type of structure indicates the high progressiveness of the population. A comparison of the age structure of the tehsil with that of the eastern U.P and as a whole and with some of the advanced countries of the world showed a vivid contrast. The explanation lies in the fact that the workers generally loose their health during working age and hence their lives are shortened. The study area affirms the accelerated growth of population meaning thereby, the increase in the stock of potential parents every year.

AGRICULTURE:

It is not merely an occupation of the people, but has become a tradition and a way of life since times immemorial. For generations, it has shaped the thought and destiny of its people. Undoubtedly, the region enjoys certain physical and climatic conditions conducive to agriculture. It occupies 81.85 percent of the total working population. The

SHAHGANJ TEHSIL LITERACY

PERCENT OF TOTAL POPULATION
- 16 - 24
- 24 - 32
- 32 - 40

Figure 2.11

44
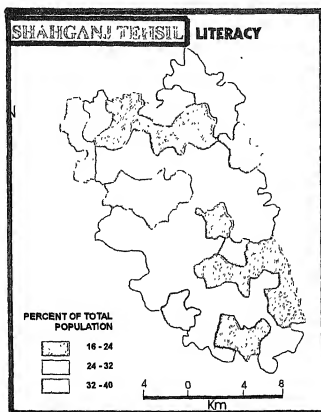
DECADAL VARIATION IN LITERACY RATE (IN %)
IN SHAHGANJ TEHSIL
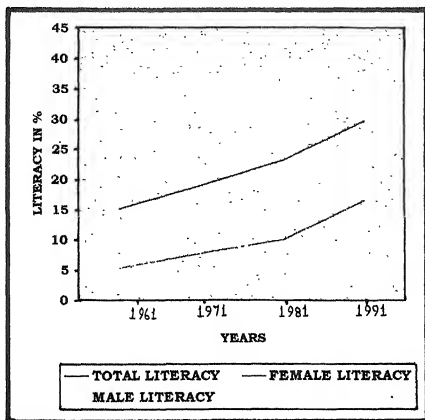
Fig. 2.11-A

Figure 2.11-A

cropping pattern of the tehsil typifies the underdeveloped economy, in which most of the agricultural land is devoted to the cultivation of food crops meant for local consumption, while the cash crop occupies a negligible percent of the total land. There are three crop seasons viz. Kharif, Rabi and Zaid, but the first two play a very important role in the Tehsil's agricultural economy.

KHARIF CROP:

Starts from July and ends up in mid November. The principal Kharif crops are Paddy, Millets, Jowar, Bazra, Arhar etc. The production of Kharif crop is fairly low as compared to Rabi crops as they require small quantities of seeds, fertilizers and other inputs and almost no irrigation, if the monsoon rains are timely. As regards the acreage under various Kharif crops in the tehsil paddy shares 27.1 percent of the total cropped area, while the corresponding figures for the millets, maize and arhar are 2.45 percent, 12.5 percent and 2.6 percent respectively. The spatial variation of Kharif crops is shown in the table (Table 2.10). The highest acreage under paddy is 12673 hectares is recorded in Shahganj block, while the smallest acreage under paddy is 6087 in Khuthan block. Bajra, Maize and Arhar have highest acreage in Khuthan block while the lowest acreage of these crops is recorded in suithakala block. Similarly, the highest acreage under Jawar occurs in Khuthan block, while the lowest in Shahganj block.

TABLE 2.10

CROPPING PATTERN OF KHARIF SEASON IN SHAHGANJ TEHSIL IN 1999-2000 (IN HECTARES)

S.NO	BLOCKS	PADDY	JOWAR	BAJRA	MAIZE	ARHAR
1.	SUITHAKALAN	8992	81	8	1700	323
2.	SHAHGANJ	12673	29	13	2246	291
3.	KHUTHAN	6087	257	77	4299	612

SOURCE : District Statistical Bulletin, Jaunpur, 2000

RABI CROP:

This season fairly begins around mid November and lasts up to March and thus the entire process of Rabi cropping from sowing to the harvesting and threshing takes about four and a half months to finish. The major Rabi crops are wheat, barley, gram, potato etc. The sowing starts in the first or second week of November. The preparation of fields for Rabi crops requires high irrigation in order to add moisture to the topsoils to expedite the early germination of the crops. These crops jointly account for 48 percent of the total cropped area in the study area. Wheat is the major crop of Rabi season followed by red gram, potato and barley   (Table 2.11).

TABLE 2.11

CROPPING PATTERN OF RABI SEASON IN SHAHGANJTEHSIL 1999-2000
(IN HECTARES)

S.NO	BLOCKS	WHEAT	BARLEY	GRAM	POTATO
1.	SUITHAKALAN	8862	219	407	442
2.	SHAHGANJ	13576	124	333	382
3.	KHUTHAN	8856	244	398	482

SOURCE : District Statistical Bulletin, Jaunpur, 2000

As regards the spatial pattern of Rabi crops, greater acreage under wheat occurs in Shahganj block, while the lowest recorded in Khuthan block. The highest acreage of barley occurs in Khuthan block, while the lowest recorded in Shahganj block. Similarly, the highest acreage under gram and potato are recorded in Suithakala and Khuthan respectively.

ZAID CROP:

The cropping season spreads from April to June. The principal crops are maize, moong, urd and a variety of vegetable, which jointly account for about 1.5 percent of the total cropped area. The total acreage under these crops is irrigated by tube wells, pump sets and canals. The acreage was almost negligible but during the last one decade due to the growing functional dimensions and population size in service centres, the acreage under these crops has considerably increased.

SETTLEMENT:

'Settlement' means mans inhabited village and their houses. The physio-cultural factors have always determined the spatial pattern, distribution and types of settlements. Any settlement in which most of the people is engaged in agriculture, mining, forestry and fishery are known as 'rural settlement'. The rural settlement develops characteristics in response to physiographic condition. It is often called as "Agricultural Workshop". According to 'Singh', "Settlements are the principal human phenomena which bear a profound correlation with physical and cultural features" (Agarwal, S.N., 1967).

"Settlements" which are concrete expressions of human occupations of the earth surface have always found place in geographical writings since the dawn of the human civilization. After food, 'shelter' is the most important need of man. Men construct houses and develop settlements to protect themselves against the vagaries of weather and to enjoy social life. In fact, "settlement" is man's important step towards adapting himself to his physical environment". It was 'Carl Ritter' in the early 19th century who paved the way for the geographic study of settlement. According to 'Kirk.H.Stone', the subject is both old and new.

According to 'Modern Settlement Geographers', 'Settlement' refers to, an organized colony of human beings ranging from a temporary miners and hunters to more sedentary houses of farmers and city dwellers.

According to 'Prof R.L. Singh', "Settlement" is an occupancy unit and represents an organized colony of human beings including the buildings in which they live or work or use or store them, otherwise, and the tracks or streets over which their movement takes place.

According to the 'German geographers', "Settlement Geography" focuses on residential relationship of man to land. He also stressed that the group of houses in villages own rather than a single houses.

Shahganj tehsil possesses a high percentage of rural population. According to 1991 census about 26.03 percent populations lives in 508 villages distributed in three development blocks. These villages are of different sizes and are scattered all over the area forming the compact to sprinkled pattern of settlements (Singh, Kashi Nath & Singh, Kailash Nath, 1971). The important geographical factors like fertile land, water availability, transport and industries are the leading factors for the distribution of population over an area. Shahganj experiences low and medium density of settlement (Singh, R.L., 1955). The spatial pattern of settlement shows that there are two types of patterns, which are associated with distinct sets of physio-cultural elements.

(i) Compact and,
(ii) Semi-Compact

(i) COMPACT / NUCLEATED:

Based on farming, comprises houses, farm structures, and other buildings such as religious centres with fields for grazing animals and growing crops surrounding the village building found mostly in highly productive alluvial plains. Houses are built in close vicinity to each other. They keep their animals also in a part of their houses. Houses are closely spaced and streets are narrow. People are closely knit in a social bond.

(ii) SEMI-COMPACT:

This is a transitional phase in the growth of a settlement as the new technology is adopted and the population increases. The only generalization about the semi-compact settlement is that in the arable lands and fertile plains, the primary types of settlement were small and loosely nucleated and infact, lacked a pattern. Increase in population can cause village to grow and the number of houses increases. These houses start occupying the open spaces and leads to semi-compact settlements, which ultimately acquire the shape of a nucleated or compact settlement. The critical value of density in Shahganj tehsil is between 61.42 settlements / 100 km^2 (Table 2.12). The density ranges between 2065 persons per square km.

TABLE 2.12

DENSITY OF SETTLEMENTS IN SHAHGANJ TEHSIL -1991

S.NO.	BLOCKS	DENSITY (SETTLEMENT / 100 SQ.KMS)
1.	SUITHAKALAN	68.64
2.	SHAHGANJ	61.42
3.	KHUTHAN	96.87

SOURCE : District Statistical Bulletin, Jaunpur, 2000

The patterns of settlement found in the study area are rectangular shaped, square shaped, radial shaped and linear shaped.

INDUSTRIES:

Industry no doubt forms the keystone in the economy of region, but an analysis of occupational structure of the region reveals that manufacturing employs only 14.6 percent of the total working population, which is extremely low percentage as compared to household industries, which shared 5.77 percent of the total working population. The study area possesses a great potential for the industrial development, because it has variety of industrial resources like vegetation products, agricultural products, livestock products, large population, infrastructure facilities, etc. which are available in abundance through out the area. Several large, medium and small-scale industries are scattered over the area. There has been a long tradition of village and cottage industries like hair oils and perfumes. It employs two-to-three hundred persons with the modest investment. The other traditional cottage industries used to be the manufacturing of paper from waste fibers, flex and hemp. The handloom textile, fabrics and woolen carpet making and other traditional cottage industries, which are still thriving. Hand-driven or power-driven looms owned particularly by the weavers produce the handloom textiles. The other type of cottage industries found in the area are gur and khandsari making, bidi making, cotton carpets, handloom cloth, resha, pottery, leatherwork, carpentry, hand-pounding of paddy etc. centre of the sugar refining industry.

TABLE 2.13

BLOCKWISE DISPERSAL OF S.S.I. UNITS IN SHAHGANJ TEHSIL 1999-2000

S.NO.	BLOCKS	SSI TYPE	UNITS NO'S	CAPITAL INVESTMENT	PRODUCTION (IN LACS)	EMPLOYMEN GENERATION
1.	SUITHAKALAN	4	30	44.08	37.50	232
2.	SHAHGANJ	16	195	176.00	259.53	992
3.	KHUTHAN	3	28	24.02	29.13	195

SOURCE: District Industrial Bulletin, Jaunpur 1999-2000.

Shahganj emerges as one of the industrial estate among the seven in the Jaunpur district.

TRANSPORT AND COMMUNICATION:

Communication means the imparting or transmission of information. It implies the conveyance of information. It is very necessary for the development of industries commerce and trade in the country. Improvements in communication help to speed up transport, while improvement in transport help to speed up communication. Important means of communication are the postal services, telephone services, radio and television etc. Transport provides a vital link between production centres, distribution areas, and the ultimate consumers. It also exercises a unifying and integrating influence upon the

economy. Development of cheap and efficient means of transport is necessary for the progress of large and under developed region. The vast natural resources, which the region possesses, cannot be exploited fully without developing good means of transport. They serve as a lifeline for any country or region.

The tehsil has a large network of railways, roadways and communication lines. A branch metalled road leads Northeastwards to Azamgarh and a 2nd metalled road as far as Sarai Moinuddinpur, goes northwards to Sarpatha and on to Kadipur in the Sultanpur district. Parallel to the main road runs the loop lines of the Oudh and Rohil khand railway from Benaras to Faizabad and Lucknow with a station to the Northwest of the town. The line is here joined by a metre gauge branch of the Bengal and North Western Railways to Azamgarh and main manufacturing with the construction of this branch the site of the station was shifted further north, the old station near the town being now reserved for goods traffic. The tehsil has 565 kms of roads in which Shahganj itself has 227 kms of roads ,while Khuthan and Suithakalan has 130 kms and 208 kms of roads respectively with 26 bus stations, 2 railway stations. While a number of tehsil roads land,PWD roads (283 kms) in which Shahganj shares 110 kms, while Khuthan and Suithakalan has 65 kms and 108 kms respectively, connect this area with important places like Lucknow, Varanasi, Allahabad etc. (Fig. 2.12) State Highway Numbers 5 and 34 pass through the area. Besides this, there are 22 Telegraph offices, 34 Branch Post offices, 62 Public call offices (PCO) and 246 telephone connections too. These facilities considerably help not only the movement of goods and people, but also held communicate the important messages quickly inside and outside the areas.

Figure 2.12

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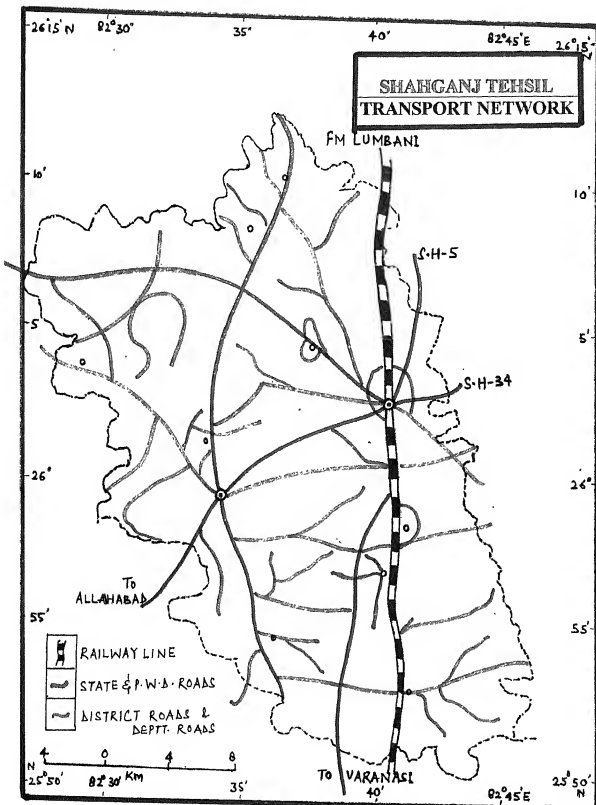
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CHAPTER THREE

IDENTIFICATION OF BASIC UNITS FOR SPATIAL PLANNING

INTRODUCTION:

Planning should be seen as a means to so organize human society that it can adjust itself to the changing socio-technical environment and can use this environment to maximize the welfare of its members. The very fact that almost all countries of the world have now adopted planning as a technique for socio-economic development, is a fair indication of its crucial role. Planning is resorted to for a variety of purposes i.e. socio-economic development, economic growth, social welfare, power politics etc. It attempts to study the problems of the society from spatial perspectives. It tries to solve these problems through territorial planning. Grouping of countries and substantial units on the basis of homogeneity and inter-dependence into multinational or substantial regions for planned development is one of the tasks of regional planning. Regional planning takes into account the limitations of both the human and natural resources within each region. In some areas, the human resources are of high quality, but material resources are wanting. 'Japan' and 'Great Britain' offer good examples of nations depending largely on imports of raw materials and exports of finished products. In other regions tremendous material resources coincide with low quality of human resources owing to untrained manpower and poor technology. The level of functional interaction between the service centers and the surrounding areas determines the pattern of spatial organization of human activities over the space.

CONCEPT OF PLANNING UNITS:

The concept of planning units is basically rooted in the classic 'Central Place Theory' of 'Walter Christaller' and extended by 'Losch'. Service centres do not represent chance growth instead they develop to cater to the material needs and requirements of the regions that surround them.

'Jefferson' (Ullman, H.L., 1953) rightly observes, that central places do not grow up of their own, but the countrysides set them to do tasks, which must be performed in them. In India, 'Mishra' has advocated the idea of 'Growth Pole Strategy' (Mishra, R.P., 1970). He has explained the concept and the part played by Growth Poles in the development planning. The concept presupposes the development into a systematic order and the four tiers of hierarchy in the descending order. According to him, are:

(i) Growth Pole
(ii) Growth Centres
(iii) Growth Points, and
(iv) Service Centres

These are four economically viable locations, the infra structure of which will provide fresh channels of communications for the smooth flow of goods, services and information in any region. Such a network will apparently witness the decentralization of socio-economic services and will promote an atmosphere for better marketing facilities for rural folks. The Growth Point or small town or service centres, at the lowest rung of the ladder, on the other hand, will have a closer link with the villages. The Growth Point, Service Centre and Villages are organically and functionally linked presenting a complete spatio-functional integration in a region. Such a system of integration generates a chain reaction in the development of a region like one under study. In the sphere of a influence of a Growth Pole there are a number of Growth centres, growth points and service centres and they participate in the socio-economic change of a rural society at their respective spatio-functional levels.

The idea of Growth Pole was put forth originally by 'Perroux'. He conceived of abstract economic space, which consists of a number of centres, poles or foci from which centrifugal forces emanate and to which centripetal forces are attracted (Perroux, F., 1976). But Perroux, was not very explicit in his statement of theory. A fresh interpretation to his theory suited to geographical space was made by Boudeville, who considered Growth Poles to be the centres, which exert their considerable impact over a vast area called 'Umland' or the city region (Boudeville, H.R., 1955).

In underdeveloped countries like India, the growth foci should not be concerned with industrial development alone. They have to perform day-to-day needs of the area they serve i.e. (a) they must function as central places in the form postulated by Christaller and (b) they must act as innovative and growth promoting centres. They must have processing and manufacturing activities of both basic and non- basic types and should be able to provide employment to the dropouts of the agricultural system (Misra, H.N.). Thus, the role of growth foci is not limited to manufacturing of goods; it includes the creation of the concept of Growth Foci as against the concept of Growth Pole. This new concept of Growth Foci seeks to integrate the main elements of the central place theory, the growth pole theory, and the spatial diffusion theory. He envisages a 5-tier hierarchy with the central village at the local level, the service centres at the micro-regional level, the growth points at the sub-regional level, the growth centres at the regional level and the growth poles at the national level.

IDENTIFICATION OF PLANNING UNITS:

The level of functional interaction between the service centres and the surrounding areas determines the pattern of spatial organization of human activities over the space. The more uniform is the distribution of the service centre, the greater will be spatio-functional interaction between them and their service areas, and the more efficient spatial organization of human activities. Hence, in order for an efficient spatial organization of human activities, which may contribute, to the balanced socio-economic development in an area, the spatial structure of the service system i.e. the service centres and their central functions and services will have to be re-evolved and modified through conscious efforts. The identification of planning units, the service centres and their tributary areas is therefore, a significant step in this direction and is of paramount significance for locational development planning. However, the process of identification of spatial planning units is fraught with many difficulties, which are briefly mentioned below:

(i) The unavailability of statistics relating to various factors of production, markets and motivation considerably hinder the process of identification (Swaroop, A,.1979).

(ii) The identification of planning units involves the investigation of all settlements and all types of central functions and services, but the data about them are not available in government records, Census Hand Book, Town- Village Directory etc. This leaves much scope for intuitive decision, manipulation and guess works.

(iii) The existing pattern of service centres in India is the result of the forces of history and culture on the one and of economic and political exigencies on the other (Roy, P. and Patil, B.R., 1977). But the relevant data and information about these forces are not available in government records.

(iv) The information about the settlements and their functional structure, as mentioned in various documents and records are not compatible. This also hampers the process of identification of planning units.

(v) Similarly the relevant statistics about the commodity flows and consumers' behaviour and the maps, which form the backbone of entire service centres, are also not available. Besides, the functioning of different departments and agencies of government is neither coordinated at spatial levels nor at the economic levels. This also poses problems in the identification of planning units.

(vi) The multiplicity of the complex methodologies and techniques available to the researchers create confusion.

However, a careful analysis of the available techniques provides substance for the identification purpose. The above constraints and limitations do adversely affect the process of identification of planning units, but their impact can be minimized to a considerable extent by making accurate field surveys and careful field investigation. However, for identifying planning units in "Shahganj" Tehsil, the following criteria have been used:

(i) Central functions and services available at a centre.

(ii) Consumers' behaviour and the spatial preference for a centre.

(iii) Connectivity Index of a centre.

IDENTIFICATION OF SERVICE CENTRES:

A 'Central Place' is defined as a settlement providing services for the population of its hinterland-known as complementary region, supplying it with central goods and services such as administrative, banking and professional services, educational, leisure, and cultural facilities, as well as those of retail and wholesale trade (Christaller, W., 1933). Central places vary in importance. Depending upon the central functions performed by them and the population served, they can be classified as high order centres or low order centres. Higher order centres stock a wide array of goods and services and serve a large population, whereas, lower order centres stock a smaller range of goods and services and serve smaller populations.

However, the concept of central places and service area is believed to have first originated with the "Der Isolierte Staat" (Theory of Isolated state) of Von Thunen in 1826, when he presented a "Geographic Rent Theory" based on the concentric land use pattern around a market centre (Von Thunen, J.H., 1926). Later in 1916, 'Gradman' also contended that the distinctive role of a town was to be the centre of its rural surrounding and mediator of local commerce with the outside world. Christaller envisaged a hierarchy of central places and the hexagonal market areas right from the apex level to the local level for efficient functional interaction between them.

The tradition of central place study in India is quite old, but the early studies were simply in the form of small papers making impressionistic description of 'periodic markets', 'trade centres' and fairs. '**Kumar**' (Kumar, A. & Sharma, N., 1977) and '**Sharma**' (Sharma, N., 1979) of State Planning Institute, U.P. Luck now, have suggested in their separate papers that availability of the service opportunity is the most reliable parameter for the central places and the planning regions identification. However, the identification of the basic planning units i.e. the service centres has been made on the basis of the availability of central functions and services, consumers behaviour and preference, and the connectivity index (Fig. 3.1).

However, there are no watertight criteria for the identification of specific numbers and types of central functions in an area. This depends on the level of socio-

CORRELATION BETWEEN FUNCTIONAL UNITS AND MEDIAN THRESHOLD IN SHAHGANJ TEHSIL
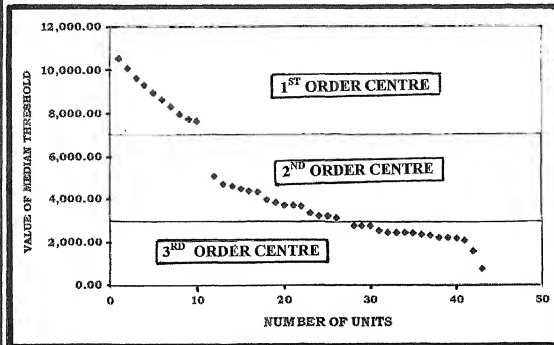
Fig. 3.1

Figure 3.1

economic development in a region for e.g. a primary school, a kirana shop, a grocery shop, cycle repairing shop, branch post office and the likes may be central functions for an economically backward area. Similarly, the above mentioned functions, which used to be central functions in 18th and 19th centuries have now ceased to be so, due to their most common and frequent occurrences.

CENTRAL FUNCTIONS:

Central functions are, in fact, basic function, which cater to the needs and requirements of the surrounding territory and are quite non-ubiquitous in nature. Various scholars have advanced their views and observations about the identification of service centre itself. 'Bhatt' (Bhatt, L.S., 1972); observes that all functions, which are, in some way or the other, concerned with the government for their development should be recognized as central functions. 'Rao' (Rao, V.L.S.P., 1964) suggests that central functions should not be identified on the static ground of rarity or ubiquity but also on the dynamic ground of producers and consumers preference. Similarly, the above functions, which used to be central functions in 18th century, have now ceased to be so due to their most common and frequent occurrences.

For the identification of central functions in Shahganj Tehsil all the 548 inhabited villages were taken into consideration. First of all, the types and numbers of central functions available in each settlement were noted from the 'Census Hand Book' and 'Town Village Directory' of Jaunpur District. The functions obtained from the secondary sources were mostly policy functions. Afterwards, the location of the policy functions was confirmed and other functions and services, which were not noted in the secondary sources and were mostly non-policy functions, were mentioned through field surveys and investigations.

During field surveys and investigations it was however, discovered that some of the functions, which were at the lowest rung of functional hierarchy were highly ubiquitous and occurred very frequently, and hence, they ceased to be central functions in the study area, because the degree of importance of a function is supposed to vary inversely with the frequency of its occurrence in the area. It is quite pertinent, therefore, to weed out these functions and select more significant central functions for the identification of central functions in Shahganj Teshil. 'Deshpandey' (Deshpandey, C.D.) suggests that selecting more significant functions and services and weeding out others would streamline the problem of identification of central functions. He suggests that, this will also help in speedy coverage of wider universe without loss of precision. In this way more ubiquitous functions like betel and bidi shop, shoes and umbrella repair, black smith, carpentry, flour-grinding, barber shop etc. were left out and the major categories including 41 central functions were prudently recognized in Shahganj tehsil. Moreover, care was also taken to select the central functions strictly keeping in view the economic status and normal behavior of consumers in the area. Highly rare functions of national importance like heavy industries and factories, which require highest threshold and are quite non-regional in nature have been completely omitted. The selected 41 central functions, however, enter in to the general consumption pattern and generate centripetal and centrifugal forces in the study area. These 41 central functions are arranged in order of importance in table (Table 3.1).

TABLE 3.1

IDENTIFIED CENTRAL FUNCTIONS ALONGWITH ENTRY POINTS; SATURATION POINTS AND MEDIAN THRESHOLD

S.NO.	CENTRAL FUNCTIONS	ENTRY POINTS	SATURATION POINTS	MEDIAN THRESHOLD
I.	**EDUCATION :**			
1.	MIDDLE SCHOOL	1066	2011	1566.0
2	HIGH SCHOOL	1465	3989	2727.0
3.	INTERMEDIATE COLLEGE	3489	5275	4382.0
4.	DEGREE COLLEGE	8329	9555	8942.0
II.	**HEALTH :**			
5.	P.H.C.	627	4200	2413.5
6	SMALL HOSPITAL	1237	3785	2511.0
7.	FAMILY PLANNING	3203	4400	3801.5
8.	M.C.W C.	3203	4200	3710.5
9.	DISPENSARY	854	4000	2427.0
III.	**TRANSPORT :**			
10.	BUS STOP	854	4000	2427.0
11.	BUS / RAILWAY STATION	9000	10285	9642.5
IV.	**COMMUNICATION :**			
12	BRANCH POST OFFICE	1122	3000	2061.0
13.	SUB POST OFFICE	2875	3488	3181.5
14.	POST & TELEGRAPH	2875	3488	3181.5
15	TELEPHONE BOOTH	620	4100	2360.0
V.	**CREDIT & FINANCE :**			
16.	AGRI'AL COOPERATIVE SOCIETY	1545	6400	3972.5
17.	NATIONALIZED BANK	7700	9580	8640.0
18	LAND DEVELOPMENT BANK	7700	8920	8310.0
19.	COOPERATIVE BANK	7000	8260	7630.0
20.	RURAL BANK	1422	8000	4711.0
21	SEED & FERTILIZER DIS'ON CENTRE	1632	5000	3316.0
VI.	**EXTENXION SERVICES :**			
22.	ARTIFICIAL INSEMINATION CENTRE	2652	6000	4326.0
23.	VETIRNARY HOSPITAL	3652	3652	3652.0
VII.	**TRADE FACILITY :**			
24.	WEEKLY MARKET	1868	5450	2159.0
25.	RETAIL DAILY MARKET	711	745	728 0
26.	WHOLESALE REGULATED MARKET	9588	10580	10084.0
27.	BIG MANDI	7700	8220	7960.0
VIII.	**ADMINISTRATIVE SERVICES :**			
28.	POLICE STATION	4522	5610	5066.0
29.	BLOCK HEAD QUARTER	3422	5487	4454.5

30.	TEHSIL HEAD QUARTER	9036	12000	10518.0
IX.	**RETAIL SERVICES :**			
31.	RETAIL CLOTH	1240	3100	2170.0
32	BOOKS AND STATIONERY	1240	3100	2170.0
33.	GENERAL PROVISION STORE	2245	4000	3122.5
34.	RADIO & WATCH REPAIR	2035	3400	2717.5
35.	AUTO REPAIR SHOP	1786	2798	2292.0
36	CHEMIST & DRUGGIST	2580	4800	3690.0
37	POTTERY	2576	2875	2725.5
X.	**RECREATION SERVICES :**			
38.	CINEMA HALL	8000	10580	9290.0
39.	HOTEL & RESTAURANT	7130	8320	7725 0
XI.	**OTHER SERVICES :**			
40.	GODOWNS	852	3780	2316.0
41.	WATER SUPPLY	1245	8000	4622.5

SOURCE: Compiled & Calculated by the Author; 2000

HIERARCHY OF CENTRAL FUNCTIONS:

Various functions and services offered by a system of settlements are not equally important. Some of them are more specialized and are found in larger settlement and some are less specialized and are found in smaller settlements. Thus, there is a rank-order in the central functions and services, on the basis of their relative importance in a region to determine the hierarchy of central functions in the study area; the population threshold of various functions was taken into consideration. The 'Entry Point' (minimum population at which a particular function appear, in an area) and the 'Saturation-point' (the level of population above which a particular function is frequently available in the area) were obtained for each of the central functions and services. The interval between the 'entry-point' and 'saturation-point' marks the 'Entry Zone' (Mishra, B.N., 1998). The 'Median-Threshold' or the median population of each function, which was used to classify central functions into various orders, was calculated by dividing the 'Entry Zone' at mid point or by adding the values of 'Entry Points' and 'Saturation points' and dividing them by two (Table 3.2).

TABLE 3.2

ORDER OF CENTRAL FUNCTIONS WITH MEDIAN THRESHOLD AND WEIGHTAGE

S.NO.	CENTRAL FUNCTIONS	MEDIAN THRESHOLD	WEIGHTAGE
	1ST ORDER FUNCTIONS :		
1.	TEHSIL HEAD QUARTER	10,518.0	14.44
2.	WHOLESALE REGULATED MARKET	10,084 0	13 85
3.	BUS/RAILWAY STATION	9642 5	13 24
4.	CINEMA HALL	9290.0	12 76
5.	DEGREE COLLEGE	8942.0	12.28
6.	NATIONALIZED BANK	8640.0	11.86

7.	LAND DEVELOPMENT BANK	8310.0	11.41
8.	BIG MANDI	7960.0	10.93
9.	HOTEL & RESTAURANT	7725.0	10.61
10.	COOPERATIVE BANK	7630.0	10 48
	2ND ORDER FUNCTIONS :		
11.	POLICE STATION	5056.0	6.94
12.	RURAL BANK	4711.0	6 47
13	WATER SUPPLY	4622.5	6.34
14.	BLOCK HEAD QUARTER	4454.5	6.11
15.	INTERMEDIATE COLLEGE	4382.0	6.01
16.	ARTIFICIAL INSEMINATION CENTRE	4326.0	5.94
17.	AGRI'AL COOPERATIVE SOCIETY	3972.5	5.45
18.	FAMILY PLANNING	3810.5	5.22
19	MCWC	3701.5	5.08
20.	CHEMIST & DRUGGIST	3690 0	5.06
21.	VETERNIARY HOSPITAL	3652.0	5.01
22.	SEED & FERTILIZER DIST'ON CENTRE	3316.0	4.55
23.	SUB POST OFFICE	3181.5	4.37
24.	POST & TELEGRAPH	3181.5	4 37
25.	GENERAL PROVISION SHOP	3122.5	4.28
	3RD ORDER FUNCTIONS :		
26.	HIGH SCHOOL	2727.0	3.74
27.	POTTERY	2725.5	3.74
28	RADIO & WATCH REPAIR	2717.5	3 73
29.	SMALL HOSPITAL	2511.0	3.44
30.	BUS STOP	2427.5	3.33
31.	DISPENSARY	2427.5	3.33
32.	PRIMARY HEALTH CENTRE	2413.5	3.31
33.	TELEPHONE BOOTH	2360.0	3.24
34.	GODOWNS	2316.0	3.18
35.	AUTO REPAIR SHOP	2292.0	3.14
36.	RETAIL CLOTH	2172.5	2.98
37.	BOOKS & STATIONERY	2172 5	2.98
38.	WEEKLY MARKET	2159.0	2.96
39.	BRANCH POST OFFICE	2061.0	2.83
40.	MIDDLE SCHOOL	1566.0	2.15
41	RETAIL DAILY MARKET	728.0	1.00

SOURCE: Compiled & Calculated by the Author; 2000

Median Threshold marks a level of population, which is believed to provide an adequate consumption and demand level to sustain that function in that area. To find out where central functions clustered in the discrete groups, they were ranked in order of 'Median Threshold' values (Table 3.2) and a scatter diagram was prepared by showing the 'Median Threshold' values against the ranks. The Scatter diagram produced three clear-cut breaks resulting into 3 orders of central functions in the, study area (Fig.3.1). A settlement to be selected as service centre must qualify in at

least three or more central functions on the basis of the respective 'Median Threshold'.

CONSUMERS' BEHAVIOUR AND SPATIAL PREFERENCE:

To confirm and to verify the hierarchical grading of central functions as well as to identify the service centres, an attempt was made to analyze the consumers' behaviour and the spatial preference about various orders of functions and services in the area. The analysis of consumers' behaviour involves the consideration of two fundamental elements viz. the interaction of consumers with various settlements over the space and their demand for various functions and services over time. The former involves the distance, cost and time in traveling from residence to a particular settlement, while the latter involves the variety, quality and order of functions and services available in a settlement. These components determine to an appreciable extent, the behaviour of consumers and their spatial preference for various orders of functions and services in the area (Mishra, B.N., 1998).

Christaller advocated in his 'Central places theory' and verified in several subsequent central place studies that all functions and services are not available at all settlements. The non-ubiquitous specialized functions tend to concentrate in larger settlements, which are fewer in number and serve a large population and area, as they have adequate potential to sustain them, while the common and less specialized functions tend to be located in smaller settlements, which are greater in number and serve only a smaller population and area. The intermediate level functions will, naturally, be located in medium size settlements. This locational difference in the availability of various goods and services in an area produces a varied pattern of consumers' behaviour and spatial preference. All other things being normal, the consumers are expected to travel short distance and preferably visit nearest settlements for lower order goods and services (Mishra, B.N., 1998). But for specialized functions consumers will travel longer distances and will visit higher order service centres or town. The settlements large or small providing various goods and services to their related areas are naturally the service centres.

For analyzing the consumers' behaviour and the spatial preference of people for various functions and services in Shahganj Tehsil, interlink age and inter-dependency maps were prepared showing cluster of settlement dependent on specific centres at each level of functional hierarchy. The relevant data for all 548 villages for preparing interlinkage maps were derived with the help of a questionnaire (Appendix-1) by directly visiting the service cpentres and interviewing the people and shopkeepers. The data so derived, was organized in accordance with the peoples choice of centres for various levels of functions. If the majority of people (more than 50 percent) of a village preferred a particular centre for particular level of functions, it was linked with that centre by drawing a straight line. Thus, all the villages, depending on various centres for various orders of functions and services were linked and the interlinkage and interdependence map was completed. The map (Fig.3.2) shows the actual movement pattern of people, seeking functions at various levels of functional hierarchy and produces clear-cut graded spatial hierarchy in the area.

For, the first order functions and services people of the area mostly visit Shahganj Tehsil. But for the wholesale marketing and specialized purchasing the traders and the people of the tehsil occasionally go to Varanasi, which is located to South-East of the Jaunpur district headquarters and functions as hub of trade and commerce for the neighbouring districts. For the second order functions and services

Figure 3.2

63
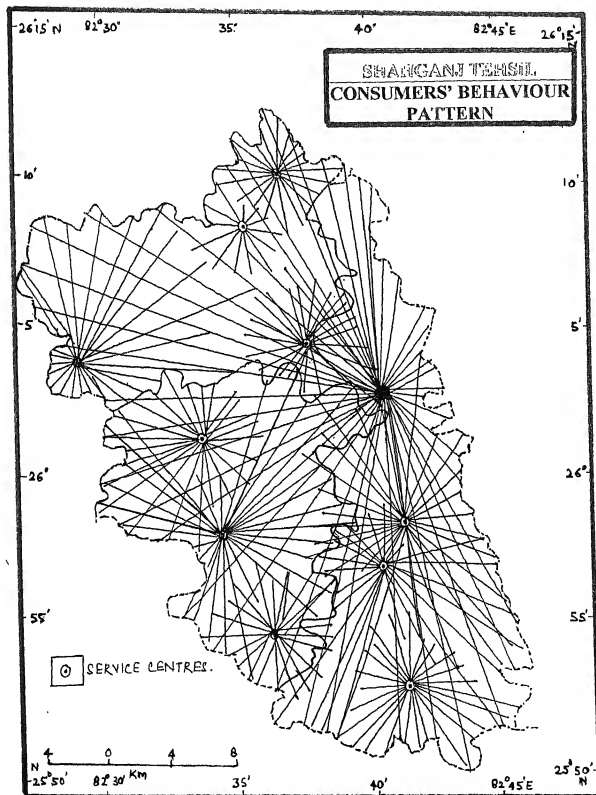
as evident in the spatial preference and consumers' behaviour map (Fig 3.2), the people of the area visit such centre as provide second order functions and are comparatively closer to the consumers. Such centres are Khuthan, Khetasarai, Samodhpur and Rudhauli. The third order functions and services in the area are available at 6 centres. A settlement to be identified as service centre must figure in the consumers' behaviour map.

CONNECTIVITY INDEX:

Connectivity Index refers to the determination of connectivity scores for various service centers by assigning differential weights to various road links and rail connection in the area (Mishra, G.K. -1972). In the study area, three types of connections viz. rail; tehsil roads and P.W.D. roads are found. Weights have been assigned on the basis of total kilometerage of these connections.

The total length of rails, tehsil roads and P.W.D. roads in the tehsil are 151 km., 565 km. and 283 km. respectively, which bear a ratio of 1:3.75:1.85. This ratio has been used as weights for the respective connections e.g. 1 point has been assigned to rail connection 3.75 points to tehsil roads as they stand in 1 to 3.75 ratio, while 1.85 points have been assigned to P.W.D. roads, whose total length is 283 km., which is 1.85 times that of the rail connection.

The connectivity indexes of only those settlements were considered, which had one or more links of the above-mentioned connections. In this way, the connectivity scores for all such settlements as were situated along the above connections was prepared by adding the total points of all the connections of a settlement. For e.g., if a settlement had one rail link one district road and two P.W.D road its total score was derived by adding up the respective weights of these connections that is 8.45 points. Thus, a connectivity index of the settlements of the area was prepared in which the connectivity scores varied from 118 to 17 points. The highest 118 points were scored by 'Shahganj' city having 15 connections while 'Aarsiya' having 2 connections scored the lowest 17 points. The connectivity index (Table 3.3) shows the connectivity scores of various settlements that have scored a minimum of 17 points or more-a basic requirement for a settlement to be identified as service centre in the study area. The connectivity index shows the hierarchical grading of service centres on the basis of connectivity scores. 'Shahganj' city stands on the top with 118 points whereas, there are four service centres having connectivity scores ranges between 89 to 63 points and six service centres having connectivity scores ranges between 46 to 17 points (Fig. 3.3).

TABLE 3.3

CONNECTIVITY INDEX

S.NO.	SERVICE CENTRES	NO. OF CENNECTIONS	CONNECTIVITY SCORES
1.	SHAHGANJ	15	118.00
2.	KHETASARAI	12	89.00
3.	KHUTHAN	10	80.28
4.	SAMODHPUR	9	71.73
5.	RUDHAULI	8	63.18
6.	MIHRAWANA	5	46.08

7.	GAIRWAHA	4	37.53
8.	PATTI NARENDRPUR	4	37.53
9.	MOINUDDINPUR	4	37.53
10.	MALHANI BAZAR	3	28.98
11.	AARSIYA	2	17.00

SOURCE: Compiled & Calculated by the Author, 2001.

THE SERVICE CENTRES:

Service Centres are actually the Central Places. To identify service centres, it is necessary to identify, firstly the Central Functions. These central functions are found in service centres, which cater to the needs of the population itself. The 4 types of facilities, which these centres ought to have, are:

(i) Marketing : Grocery and General Store, Barber Shop etc..

(ii) Services : Middle School, Sub Post Office, Cooperative Bank etc..

(iii) Processing Activities : Rice Mill, Flour Mill, Fruit Canning etc.

(iv) Recreational Facilities : Cinema Hall, Hotel and Restaurant etc.

The objective of these 'Service Centres' is to create channels through which "urban influence" can penetrate to the remotest part of the country. These centres will attract local talent to start a 'reurbanization' process by way of diversifying the occupational base and initiating a different style of life. In this way, only those settlements were identified as service centres which satisfied the following 3 requirements:-

(i) A settlement, which qualifies in at least three central functions on the basis of respective median threshold.

(ii) Figures in the consumers' behaviour and spatial preference map, and

(iii) Scores at least 17 points in connectivity index.

On the basis of the above criteria, only 11 settlements fulfilled the above requirements and therefore, they were identified as service centres in the study area. They are listed in the following table (Table 3.4) and illustrated on the map (Fig. 3.4).

TABLE 3.4

SERVICE CENTRES WITH TYPE, NUMBER OF FUNCTIONS:

S.N.	SERVICE CENTRES	TYPES OF FUNCTION	NO. OF FUNCTIONS
1.	SHAHGANJ	43	279
2.	KHETASARAI	30	154
3.	KHUTHAN	29	104
4.	SAMODHPUR	27	98
5.	RUDHAULI	25	92
6.	MIHRAWAN	20	84
7.	GAIRWAHA	19	80
8.	PATTI NARENDRAPUR	19	78
9.	MOINUDDINPUR	18	75
10.	MALHANI BAZAR	17	68
11.	AARSIYA	15	62

SOURCE : As Compiled by the Author, 2000.

CORRELATION BETWEEN SERVICE CENTRES AND CONNECTIVITY SCORES IN SHAHGANJ TEHSIL

Fig. 3.3

Figure 3.3

SHAHGANJ TEHSIL
IDENTIFIED SERVICE
CENTRES

Figure 3.4

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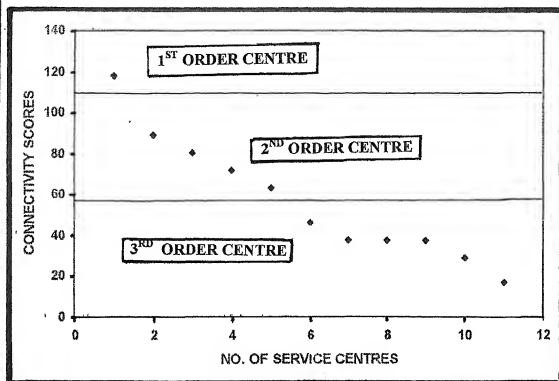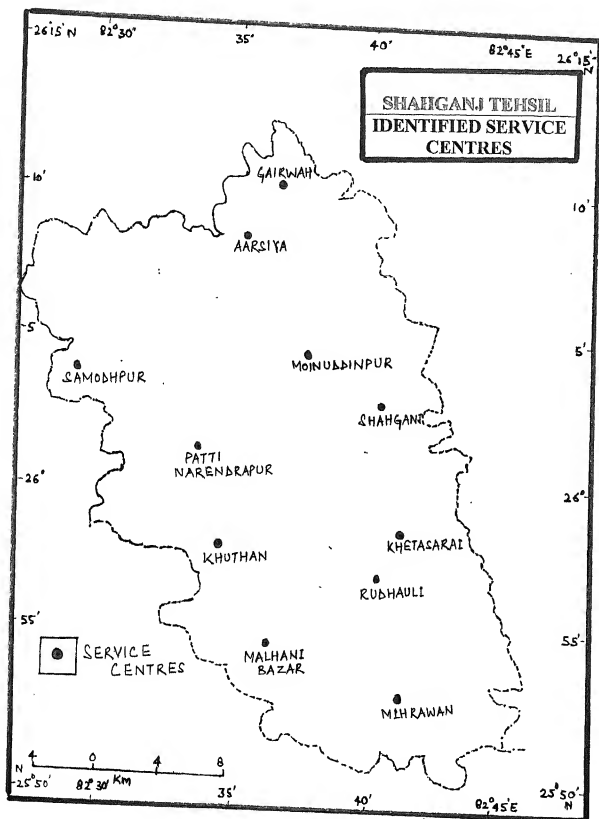
HIERARCHY OF SERVICE CENTRES:

Service Centres possess the basic infrastructure for the diffusion of innovations and for small scale processing and manufacturing activities. Service Centre is a functional term and it is measured in terms of the needs of the population. These functions are graded on the basis of the population served and area served leading to grading of centres into various hierarchical orders. 'R.P. Mishra' has given five-tier hierarchy for developing countries especially for India.

(i) Growth Pole.
(ii) Growth Centres.
(iii) Growth Points.
(iv) Service Centres.
(v) Central Villages.

This spatial structure is already available in all the developing countries. The benefit of this hierarchy is that the development is diffused to the weaker areas and sections of the society. Greater the function, greater the income, greater the job opportunities, and higher the standard of living. Thus, the orders of service centres promote the process of development in a region.

CONCEPT OF CENTRALITY:

Centrality is a concept that signifies the Relative Functional Importance of a settlement. According to Christaller (Christaller, W., 1933), Centrality is not the sum total of the inhabitants of the Central place but rather their combined economic effort that is reflected in the functional character of a Service Centre. The population may contribute to but cannot equal that importance. In 'Southern Germany' he has given a formula for measuring the "Centrality" of a region as follows:

$$Z_z = T_z - E_z \times \frac{T_g}{E_g}$$

Whereas, Z_z means Centrality of a Service Centre.
T_z, Total Telephone Connection in a central Place.
E_z, Total population of the Service Centre.
T_g, Total Telephone Connections in the Region.
E_g, Total Regional Population.

'Trewartha' used functional attributes and agglomeration size for determining the functional importance of American Hamlets. 'Smailes' used variety of function and services like banks, secondary schools, hospitals, cinema halls and identified 5 order of service centres in England. 'Harold Carter' used historical and evolutionary factors in deciding the 'Centrality' and hierarchies of central functions in Wales.

Several scholars in India too have tried to measure the 'Centrality' of service centres, on the basis of number and quality of central functions available at various service centres. 'A.K.Dutta', 'L.S.Bhatt', 'R.P.Misra' and 'B.N. Mishra' have made important contribution.

'A.K. Dutta' has given a formula for measuring the 'Centrality' of a region as follows:

$$CHL = \frac{1000 \, (X_i)}{A} + \frac{1000 \, (Y_i)}{B}$$

Whereas, CHL = Composite Hierarchy Level.
A = Sum of customers using a market or the total population served by a market centre.

B = Sum of market areas from which customers are attracted.

X_i = Number of customers shopping in market place i.

Y_i = Catchment area of a market place i.

Here, we have calculated the 'Centrality Score' by using the method developed by Mishra B.N. (1980). As per his method the weight age for different functions were calculated by the following equation:

$$W_{fi} = \frac{M_{ti}}{M_{tl}}$$

Where, Wfi is the desired weight of the function i.

M_{ti} is the median threshold of function i. and,

M_{tl} is the lowest median threshold in the series.

To determine the Centrality scores of service centres a functional matrix was prepared with service centres as rows and functions and services as columns. The numbers of functional units were carefully interpolated in each cell. The centrality index was calculated by the following equation:

$$CI = \Sigma(Fu_1 \times Wh_1) + (Fu_2 \times Wh_2) \ldots\ldots (Fu_n \times Wh_n)$$

where, CI = Desired Centrality Index.

Fu = No. of Units of Function 1,2,3…..n.

Wh = Weight of the respective function 1,2 ,3 …. n.

The centrality score values have been given in the table (Table 3.5)

In our study area we find that the Centrality Score of 'Shahganj' tehsil is the highest having 1799.28 wheras, Aarsiya bazaar lies at the bottom having 186.24 as centrality score (Table 3.5).

TABLE 3.5

SERVICE CENTRES WITH CENTRALITY SCORE POINTS ALONGWITH GRADING:

S.N.	SERVICE CENTRES	CENTRALITY SCORES	GRADING
1	SHAHGANJ	1799.28	1ST ORDER
2	KHETASARAI	701.05	2ND ORDER
3.	KHUTHAN	672.03	2ND ORDER
4.	SAMODHPUR	602.05	2ND ORDER
5.	RUDHAULI	588.36	2ND ORDER
6.	MIHRAWAN	476.00	3RD ORDER
7.	GAIRWAHA	430 01	3RD ORDER
8.	PATTI NARENDRAPUR	376 02	3RD ORDER
9	MOINUDDINPUR	343 06	3RD ORDER
10.	MALHANI BAZAR	203.00	3RD ORDER
11	AARSIYA	186.24	3RD ORDER

SOURCE: As Compiled & Calculated by the Author, 2000.

On the basis of the centrality score values, grading have been assigned to each service centre. We find that there are 3 clear cut breaks (Fig. 3.5) resulting into three orders of service centres in the study area. There is only one first order service centre viz. 'Shahganj', which provides all sorts of higher order functions along with the second and third order functions and services. There are four-second order

CORRELATION BETWEEN SERVICE CENTRES
AND CENTRALITY SCORES IN
SHAHGANJ TEHSIL
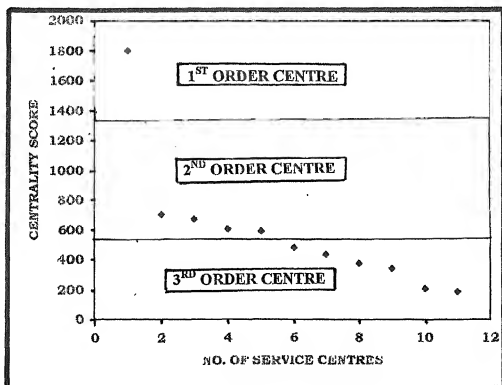
Fig. 3.5

Figure 3.5

service centres, one being the block headquarter i.e. Khuthan and six third order service centres (Fig. 3.6).

Shahganj is the biggest service centre. It enjoys 43 types of functions, 279 units of functions and 118 points as connectivity scores (Fig. 3.3). Being a tehsil headquarter and a municipal board and it command a good centrality and is located in the northern portion of the study area along state Highway SH-5 and SH-34. This service centre is adequately connected with surrounding areas by roads and railways and also with various important places of the country. These locational attributes have added a lot to the functional status of the centre, which serves the surrounding countrysides in the entire tehsil at the first order of functional hierarchy (Dubey, V.N., 1993).

Khuthan, Khetasarai, Samodhpur and Rudhauli are second order rural market centres, which provide a variety of administrative, economic and social functions and services to their surrounding areas. All of these centres are adequately linked with their surrounding regions by roads and railways. They are easily accessible to rural population, because of road connections. The types and number of functions in these centres vary from 25 to 30 and from 92 to 154 respectively. The connectivity scores vary from 63.18 to 89.0 points. Khetasarai occupies the top position in terms of the above-mentioned variables. These centers jointly supply the needs and requirements of the rural people at the second level of the functional hierarchy in the study area.

There are six third order centres viz. Mihrawan, Gairwaha, Patti Narendrapur, Moinuddinpur, Malhani Bazar and Aarsiya Bazar. They possess smaller functions of the third level and are easily accessible to the surrounding rural areas. Hence they cater to the needs of the surrounding population and area at the third level of functional hierarchy.

CONCEPT OF SERVICE AREA:

Service Centres form focal points for a number of smaller settlements around them. Together, the service centres and the dependent settlement constitute a functional region. All settlements within the area interact with central places in many ways and this forms the basis of their inter-relationships. The service centre is the focal point for the distribution of a wide range of consumer goods. 'G.K. Jipf', a sociologist, postulates that two sets of forces – the forces of diversification and the forces of unification, governs the size of and number of settlements in any area, and the balance between the two forces results in the regularity of settlements size and number. The forces of diversification produce a large number of settlements, which are small in size. The location of these small settlements would be determined by nearness to the source of raw materials. In such a situation, where primary economic activities predominate, land becomes the basic raw material or resource. Farmers to produce food and other basic necessities of life till Land. A peasant society rooted into the land emerges, with a large number of village settlements within walking distance of each other. Around every centre it is possible empirically to demarcate areas that are dependent on it for some service or other. In the case of small towns or villages, such service areas are few in number and these relate to goods and services of ordinary use (Mishra H.N.). The area of influence for smaller settlements in the study area may, for example, be delimited on the basis of data on: (a) addresses of patient coming to a private allopathic doctor or government dispensary (b) place of residence of customers visiting a local cloth store on selected days (c) place of residence of customers coming for cycle repairs or cycle rentals (d) villages from,

71

Figure 3.6

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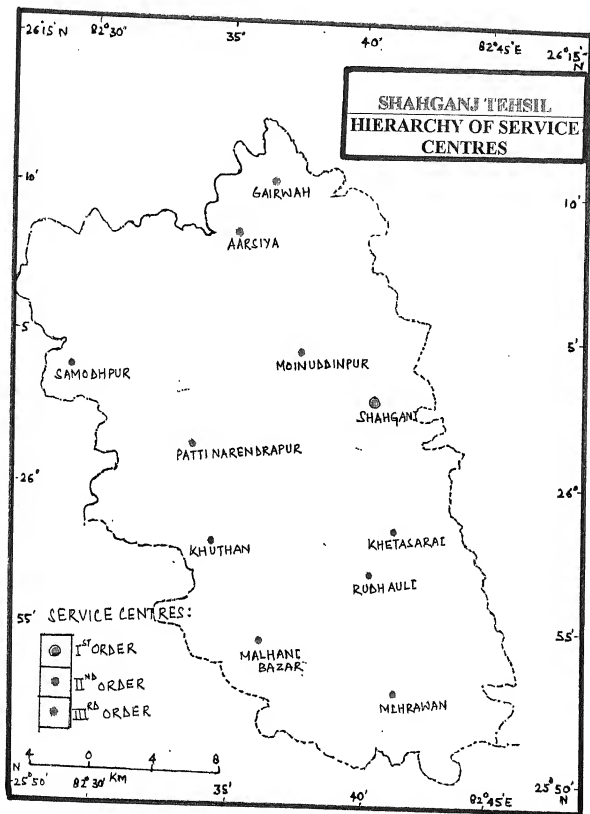
which farmers bring their tractors to the local tractor mechanics (e) villages from which students come to the local secondary school or junior college (f) village of origin of persons coming to the Cinema Hall.

The areas of central functions and their dominance are further complicated by the existence of a hierarchy of central functions, which give rise to sets of areas of influence and dominance, one within the other. The planning units may be defined as the area of dominance of a city corresponding to its hierarchical level. As a result, the same service centres also performs functions of a lower hierarchical level. As a result, each service centre may have more than one area of dominance. In fact, several areas of dominance fall within the central functions in a linear form. Similarly for each hierarchical level we have a set of areas of influence representing each service or function.

The study area forms the integral part of the Indo-Gangetic plain characterised by an even rolling surface and featureless topography (Misra, R.P., 1976). The area has been notched and dissected only along the major and minor river basins viz. the Gomati, the Mangar etc. This feature of the area has considerably influenced the even spatial pattern of service centres. However, the distributional pattern of service centres as illustrated on the map, shows more or less, random pattern, which is neither perfectly clustered nor perfectly uniform. This is unequivocally corroborated by the Nearest Neighbour (Rn) value 1.64 that implies that the overall pattern of the central functions in the Shahganj Tehsil is at present random, but shows a tendency towards uniformity. However, the distributional pattern of the service centres in the study area is almost linear. The linear arrangement of the service centres is seen along the Allahabad-Shahganj road. This attests the facts that the development of the service centres has followed the development of the network of roads and rail connections in the study area.

$$\text{Nearest Neighbour value} = \frac{\sqrt{(R_n) - 1.64}}{\sqrt{(R_n) - \dfrac{d_O}{d_E}}}$$

where, d_O, represents Observed Average Spacing of service centre and,
d_E represents Expected Average Spacing of service centre.

THRESHOLD AND RANGE OF GOODS:

'B.J.L.Berry' was the first to use the term 'Threshold'. The idea of threshold was first of all incorporated in Walter Christaller's "Central Place theory", in which he had denoted that, all centres of a service centres do not have equal functional importance, but they differ from each other on the basis of population size, complexity of functions and the number of dependent settlements. Thus, the variation in relative importance, measured in different ways, and produces a hierarchy of service centres in a regional service (Christaller, W., 1933). Walter Christaller explicitly distinguishes between the population of a centre and its importance and asserts that the population size may contribute to, but cannot equal that importance. Christaller called this functional importance as 'Centrality' of service centres. Moreover, the population size and the functional status of the service centres in an area exhibit high degree of correlation. Hence the quality and magnitude of central

functions in the service centre and the degree of dependence of surrounding settlements on them, determine the size of service area of a service centre.

Various functions and services offered by a system of settlements are not equally important. Some of them are more specialized and are found in larger settlements and some are less specialized and are found in smaller settlements. Thus, there is a rank-order in the central functions on the basis of their importance in a region. To determine the hierarchy of central functions, the population threshold of various functions was taken into consideration. The 'Entry Point' (minimum population at which a particular functions appear in an area) and the 'Saturation Point' (the level of which a particular function is frequently available in an area) were obtained for each of the central functions (Table 3.1). Adding the values of Entry Point and Saturation Point and dividing them by two produced the 'Median Threshold'. It marks a level of population, which is believed to provide an adequate consumption and demand level to sustain that function in an area (Table3.2).

'Gunuwardene' has calculated the 'Threshold' of Cities in Sri Lanka. He has advocated the threshold of goods and services in the Towns. All other things being normal, the consumers are expected to travel short- distance and will preferably visit smaller settlements for lower order goods and services. But for specialized and higher order functions, they will travel longer distances preferably to larger settlements. For analyzing the spatial preference of people for various functions in Shahganj Tehsil, inter-linkage and inter-dependency map were prepared showing clusters of settlements dependent on specific centers at each level of functional hierarchy.

In a concrete way, this concept is easily demonstrated by the minimum varying population required to maintain successively a tehsil nurse, a doctor, a specialist etc. means the minimum population that is required to bring about the offering of a certain goods for sale or to sustain any service in economic terms this means the minimum demand to make such an offering viable. 'Range of Goods' is the maximum distance over which people travel to purchase a good or derive a service offered at a service centre. At some range from the centre the inconvenience of travel measured in time, cost and trouble will outweigh the value or need of the good, or an alternative nearer centre becomes available. Again this can be visualized in the length of journey to buy bread, which is likely to be very small and hence, there will be very frequent trips. It is possible from the above to isolate two limits in relation to each good or service one can be called the lower and the other an upper limit. If these principles are applied as controls to the development that would take place on an isotropic surface that is, a flat uniform plain of equal population density and with no variation in wealth or income, the distribution of service centres will be uniform.

SERVICE AREAS OF SERVICE CENTRES:

The service areas of various orders of service centres were identified on the basis of the consumers' preference data relating to all villages. To determine the service areas of service centres, the number of dependent villages on a particular service centres were identified. To verify the accuracy of service areas drawn on the basis of consumers' preference, the 'Reilly's Law' of retail gravitation, modeled on the lines of the Newtonian Law of Gravity and modified by 'P. Converse' as "break Point" equation was used. The guiding fact of Reilly's Law, as 'Murphy' puts it is that, under normal conditions two cities attract retail trade from a smaller intermediate town in direct proportion to their population and in inverse proportion to the square of the distance between them. The Reilly's law is expressed as:

$$\frac{S_1}{S_2} = \frac{(P_1)\,(D_2)}{(P_2)\,(D_1)}$$

Where, S_1 and S_2 are the relatives shares of sales in each of the two cities made to residents of intermediate town. P_1 and P_2 are the populations of two competing centers, while, D_1 and D_2 are distances of two centers from the intermediate town.

"Converse" modified the above equation and presented it as 'Break Point' equation which is as follows:

$$B = \frac{d}{\sqrt{1 + P_1/P_2}}$$

where, B is the break point in miles or km. from the smaller of the two centres.
d, indicates the distance between two centres.
P_1, is the population of the larger of the two centres, and
P_2 is the population of the smaller of the two centres.

However, the "Break Point" marks the dividing point between two adjoining service areas. With the help of this equation, the 'Break Points' locations were determined on all major routes radiating from service centres in different direction and the break-points were joined by lines which demarcated the service areas of service centres (Fig. 3.7). The service areas determined on the basis of 'Break Point' equation were compared and the differences, which are very small and insignificant were corrected in favour of the consumers preference, because the service areas determined on the basis of consumers' behaviour and preference are more realistic and suitable for planning purposes than those derived on the basis of the break-point equation. In the field, the service areas of smaller service centres are embedded in the service areas of larger service centres as postulated by Christaller in his "Central Place Theory".

SERVICE AREA AS PLANNING UNITS:

The regional Planning, however, signifies the spatial reorganization, redistribution and utilization of resources and investments in such a balanced order and harmony as it creates new opportunities and instruments for human society to adjust itself to the changing socio-technical environment and to secure maximum welfare of its members. The service area, which is governed by a service centre, is a real spatial entity, which is explicitly identified on the basis of uniformity of spatial organization and unity of socio-economic elements. It is also designated as functional or nodal region. More or less functional regions or the service areas also exhibit similar supply and demand position, consumers' behaviour, and the social traits. This social and economic unity imparts it a unique spatial character, which has attracted the minds of the geographers and the planners to select and to treat this region for regional planning and development. Particularly, the developing countries have increased the importance of service areas, as it bears close social, cultural, economic and administrative links with the service centres. Therefore, there is strong rationale behind adopting such functional areas as planning regions.

However, as ascertained by the location and development theories, there is a nested hierarchy of service areas ranging from macro level, governed by the national capital to micro level commanded by a central village. This stepped hierarchy of service areas efficiently covers almost the entire spatial dimension of a region. In such a spatial network the transmission of development and the allocation of investments may be fairly effected through different orders of centres and the required institutions

SHAHGANJ TEHSIL
SERVICE AREAS OF
SERVICE CENTRES

26°15'N 82°30'   35'   40'   82°45'E   26°15'N

10'   10'

GAIRWAH

ARSIYA

5'   5'

MOINUDDINPUR

SAMODHPUR

SHAHGANJ

PATTI
NARENDRAPUR

26'   26'

KHETASARAI

KHUTHAN

RUDHAULI

55'   55'

SERVICE   SERVICE
CENTRE   AREA
1ST ORDER -·-·-·-
2ND ORDER ———
3RD ORDER -------

MALHANI
BAZAR

MIHRAWAN

N
0   4   8
25°50   81°30 Km   35'   40'   82°45'E   25°50'N

Figure 3.7

76
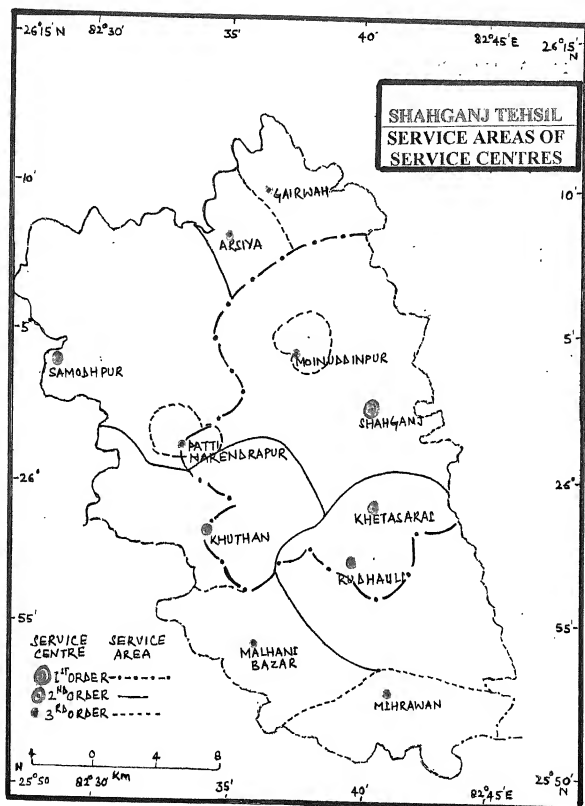
STRUCTURAL COMPONENTS OF PLANNING UNITS:

The clearest exposition of the implications of Christaller's hierarchy has been given by 'John Marshell'(John Marshall, 1969). He argues that the diagnostic criteria of hierarchical structuring are:

(i) Spatial Interdependence of the Centres: This means that there is a network of relationship between the centres represented by physical flows of goods and people. This network focuses on the hierarchical superior centres.

(ii) Functional Wholeness of the System: This is perhaps the most important criterion. It implies that any abstraction from the real world for study must consists of a 'Whole' system. To an extent this is impossible since no system is discrete in an absolute sense but certainly the consideration of arbitrarily defined tracts of territory makes no sense in central place terms.

(iii) Discrete Stratification of Centres: Stratification has to be demonstrated in objective terms.

(iv) Interstitial Placements of Orders: This is a spatial requirement in accord with Christaller's notion that lower order towns will occur at intermediate places between the next superior order towns. Whereas this is a conditional of the spatial arrangement, it is difficult to see why it should necessarily be a condition of hierarchical structuring. A hierarchical structure, dependent on threshold and range can emerge without this particular form of interstitial placement.

(v) Incremental Baskets of Goods: This condition means that each rank can be distinguished by characteristics assemblages of goods, the thresholds of which means they can only enter at a particular level.

(vi) A Minimum of Three Orders.

(vii) A Numerical Pyramid in Order Membership: These last two are self-evident.

PLANNING UNITS AND THEIR PLANNING IMPLICATIONS IN THE AREA:

Planning for socio-economic development for a region involves the decision of appropriate locations for infrastructure and developmental activities. The network of the service centres, which is already serving a region along with the respective service areas, can be utilized for such a locational planning. However, there may be areas of functional overlap and functional gaps, which pose different sets of problems to the planners. The former can be utilized for locating complementary development activities in the competing centres, while developing new service centres of the required order along with the infrastructure can solve the latter problems and developmental activities to cater to needs of the gap areas. These planning units identified on the basis of spatial interaction and the functional interdependence provide most viable area units for developmental planning. After the identification of these planning units the task of planning for the development of the area becomes quite easier, because these are characterized by the maximum degree of functional interdependence and interaction between the planning units and its surrounding countryside. Moreover, all parts of these areas are functionally and systematically integrated so much so that any innovative development-taking place in one part is bound to stimulate similar development in other parts too. To be precise, if the developmental activities are located at the service centres, they will positively stimulate favorable responses in the surrounding region leading to the spatio-functional interaction between the service centres and the service area and the diffusion of the benefits of development into the remote countryside.

The proper location of development activities constitutes a very important question and a problem in any type of development planning. Since the question of location is basic to the process of development planning, hence, these functional area units are also called "Basic Planning Units". Thus, the different order of service centres along with their respective service areas provide most appropriate locations for the installation of various socio-economic activities in any region.

It transpires from the above discussion that, the 3 orders of service centres, along with the service areas provide most dependable and viable centres for the location of various levels of developmental activities in Shahganj Tehsil.

The third order centres viz. Gairwaha, Aarsiya Bazar, Patti Narendrapur, Menhrawa, Sarai Moinuddinpur and Malhani Bazar centres commands a small service area hence, it may be used for the location of third order functions and service i.e. agricultural, infrastructure facilities like seeds, fertilizers, insecticides and implements distribution and repair services, seed stores, small godowns, sale and purchase of agricultural products (only in small quantities), sale and purchase of rural and handicraft products, services and village artisans etc..

The second order centres viz. Khuthan, Khetasarai, Samodhpur and Rudhauli comparatively command larger service areas and have better quality of spatial linkages and movements pattern. Therefore, these centres are capable of bigger investments and sustaining higher order functions and services related mostly to industry, transport and social sectors. Bigger agricultural units may also be located in them. They also have retail daily markets. Hence, the functions and services like agro-based industries, warehouses; small scale manufacturing plants relating to foodstuffs, engineering papers etc.may be located in these centres.

"Shahganj", the first order service centre, is a retail as well as wholesale market centre having a largest service area comprising the entire Tehsil. This biggest centre, being a Tehsil headquarter possesses a high degree of connectivity and good internal and external linkages. It is a focus of activities and a commercial hub for the whole region, hence all sorts of functions and services related principally to industries, transport, education, health, credit and finance may be located in this area. A variety of higher order repair services, recreational services, consultancy services etc. will also be essentially needed to cater to the requirements of the large population and area.

In this way, the 3 orders of service centres along with their service areas will provide an efficient and viable spatial system for the locational and developmental planning of infrastructure as well as developmental activities related to industrial, transportation and agricultural sectors. Hence, these functional units will be utilized for locational planning of agricultural, industrial, health and educational facilities in the subsequent chapters.

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CHAPTER FOUR

SPATIAL PLANNING FOR AGRICULTURAL DEVELOPMENT

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	Cropping Pattern	
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	Crop Combination	
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INTRODUCTION:

Agriculture forms the backbone of the Indian economy and despite concerted industrialization in the last four decades, agriculture occupies a place of pride. Being the largest industry in the country, agriculture is the source of livelihood for over 70 percent of population. It has been the source of supply of raw materials to our leading industries like Cotton and Jute textile industry. Sugar, Vanaspati and Plantations all these depend on agriculture directly. There are many other industries, which depend on agriculture in an indirect manner. Many of our small-scale and cottage industries like handloom weaving, oil-crushing, rice-husking etc. depend upon agriculture for their raw materials. Together they account for 50 percent of income generated in the manufacturing sector in INDIA.

It is also clear that agriculture plays an insignificant role in earning the means of livelihood. It has been rightly remarked, "one of the distinguishing characteristics of a region is the fact that its works is derived from the soil, its people are primarily food producers" other activities of the region are merely meant to supplement it. Agriculture employs 81.85 percent of the total working population in India itself. It is not merely an occupation of the people, but has become a tradition and a way of life since times immemorial. For generations it has shaped the thought and destiny of its people. The heavy reliance on agriculture does not mean that it is highly developed, it is rather indicative of the fact that other sectors of the economy are less developed (Zimolzak, C.E. and Stansfield, C.A., 1979). Undoubtedly the region enjoys certain physical and climatic conditions conducive to agriculture. The following factors may be mentioned which may be responsible for the dominance of agriculture in the region.

(i) An accessible and even terrain with thick alluvial soils has afforded a very good and fertile plain for agricultural development.

(ii) The temperature and rainfall are reasonably good for growing various crops.

(iii) It is poorly endowed with other natural resources, particularly, minerals necessary for industrial development.

Agriculture is tilling crops and herding animals to produce many of the needs of life, especially food, drinks, and fibers. As the main activity of man throughout much of history, it is of particular interest to the geographers. Over thousand of years, agricultural pursuits became highly diverse regionally, and cultivators and herders altered the environment on a massive scale. The cultural landscape over much of the earth's surface became largely agricultural (Mishra, B.N. & Tripathi, S.N., 1989). More than any other economic activity, agriculture is closely related to physical geographic variables viz. weather, climate, terrain and soil textures and qualities. But within roughly comparable physical geographic circumstances industrial nations are far more productive per acre than under developed ones. The prominent role of physical-geographic factors in agriculture must not be allowed to obscure the importance of cultural variables. The selected methods of dealing with environmental conditions vary according to a number of cultural factors. Farmers in different societies possess different levels of knowledge about physical environmental factors and have different technological capability for achieving desired modifications. Within the limits of such capability, a farmer may be persuaded to select particular methods and activities on the basis of perception of the relative value of various alternatives (Thomas, R.S. & Corbin, B., 1974).

The pressure of demands and necessities on agriculture is increasing very rapidly due to growing population. Unless the agricultural sector is properly managed and the effective measure of population control are adopted, particularly in developing countries, the population-agriculture relationship, which is already misbalanced, will further deteriorate at an alarming extent (Zimolzak, C.E. & Stansfield, C.A., 1979).

India is a country of villages and villagers. Here, agriculture, by and large constitutes one of the most important sectors of our economy and contributes a sizeable portion (about 50 percent) of the national income (Mishra, B.N. and Tripathi, S.N., 1985). Agriculture sector is also called 'primary sector' because it supplies the basic necessities of human life, provides basic inputs for industries and in addition to this, purveys goods of exports. The character and content of a country's economic structure alongside the potential for its development are largely dependent not only upon the quantity, but also upon the types of its output generated and distributed in the economy. Nicholas (Rubenstein, J.M. & Bacon, R.S., 1990) suggested that the rise in agricultural production makes important contribution to general economic development and that within considerable limits at least, it is one of the preconditions, which must be established before a take off into self sustained economic growth becomes possible. For example, an undue accent on production of industrial inputs in the economic policy of a country for gearing up the pace of her economic development may result in cutting down the food production and thereby creating an acute shortage of food. Ultimately, it hits hard the have-nots alone.

Hence, while framing the economic policy, a government wedded to the canons of democratic socialism can hardly afford to have a **Nelson's** eye towards the kind and quantity of agricultural output.

But owing to a variety of physical, social, economic, politico-administrative technological and policy constraints, agricultural growth is not showing expected growth in India (Mishra, B.N., 1984). As a result, the share of agriculture in the national income during the planning period has steadily declined from 48.1 percent to 36.7 percent (Sharma, D.P. & Desai, V.V., 1980). Nonetheless it is still a very significant economic sector as it provides not only food and raw materials, but also employment to a large proportion of the population. Hence, it requires a sizeable capital to sustain its development and generate surpluses for national economic development. The economic history of the developed economies amply demonstrates that improvement in agriculture preceded and paved the way for rapid strides in industry, transport and other non-agricultural activities and works (Nicholas, W.H., 1970).

REGIONAL OVERVIEW:

Shahganj Tehsil constitutes an outer part of the Gangetic plain, which represents the intensive subsistence tillage system. Being a plain area, it has been a permanent and dependable support to the sizeable portion of the regional population. The fertile alluvium brought down by the tributaries of Gomati River has formed the entire tehsil. This is the only advantage to this region due to which it is capable of feeding a large peasant population. Most of the area is comprised of usar land. However, some of the salient features of the regional agricultural system are mentioned below:

(i) The occupation of agriculture in the region is permanent and it is being carried out here for the last several centuries. Naturally, the long cultivation has now led to some serious problems like soil mining, soil exhaustion and soil erosion in the area. Thus, the system of farming in the region has been one of exploitative or predatory nature as contrasted to the ecologically balanced systems, adopted in the developed parts of the world.

(ii) The fast decay and fragmentation of the joint family system in the study area unlike other parts of the country (Mishra, S.K & Puri, V.K., 1986) has heavily told upon the structure of land holdings, which is characterized by small farms consisting of fragmented plots giving the entire agricultural landscape a morose and lackadaisical look.

(iii) The impact of entire agriculture and the modern farm technology in the farming system was quite lukewarm and sporadic. But at present it is gradually picking up. This is corroborated by the fact that the traditional implements like wooden plough, harrow, hoe, sickle etc. and traditional methods relating to sowing, harvesting, threshing, marketing etc. still dominate the agricultural scene in the region.

(iv) The lack of skill, capital and enterprise has been the major constraints, which have adversely influenced the agriculture efficiency and the land labor and land-capital productivity in the region.

(v) The farming system is intensive subsistence type rather than the extensive commercial type because- (a) food grains constitutes 80 to 90 percent of all agricultural production. (b) The major share of agricultural produce is retained for domestic consumption and an unrepresentative proportion is traded and (c) the peasant himself provides most of the inputs and so it is a family based agricultural system.

(vi) Although, the animal husbandry constitutes an inseparable part of the entire activity of agriculture, but in the area, its role in the agricultural economy is not very encouraging.

(vii) As a result, the agricultural marketing system, true to its name, has not yet developed. A network of service centres is already here, but it attends to agricultural marketing only marginally. The major part of the marketing activity relates to consumer retailing business.

(viii) Irrigation plays a significant role in determining the pattern of land use as well as the spatial organization of agriculture activity in a region (National Commission of Agriculture, 1976). But the agricultural landscape of the area presents a pattern of extensive subsistence farming with sporadic concentrations and narrow belts of intensive farming along the means of irrigation and around the markets.

THE SPATIAL PATTERN OF AGRICULTURE:
PHYSICAL DETERMINANTS OF AGRICULTURAL PATTERN:

Man's agricultural activities depend on the physical environment in which he lives although he often has tried to minimize the restrictions. Nature, in its diverse manifestations, namely the soil, the water and the climate, provides man in different areas with a variety of possibility for development (Hettner, 1947). 'Mcharg'(1966, 1969) has emphasized the importance of man's harmony with nature and the need to understand and coordinate the resources of nature with those of human beings.

Hence efforts are needed to quantify environmental attributes to meet various human needs by establishing basic guidelines for a balanced ecological planning. Geographical investigation of the physical environment of agricultural relevance is an indispensable tool for those engaged in identifying the basic regional differences in agricultural formation and geographic associations.

Spatial variations of agricultural complexes in the context of an agricultural formation are not uncommon in a large country like India since relief, climate or soil erosion has its own distinctive regional characterization or agricultural landscape. Normally, it is rather difficult to access the relief, climatic or soil character of a region. The study area consists of numerous relief features, moisture balance patterns and soil types, all of which are distinctive enough.

LAND USE PATTERN:

The land use pattern of a particular region is, by and large, determined by the nature and the general outlay of the physical as well as cultural elements. It has become essential to prepare land-use patterns, because they are recognized as necessary tools for the preparation of land capability and land classification maps, which in turn provide guidelines for the regional planning, development and future orientation of agriculture. Primarily, the physical factors like climate, topography and soils set the broad limits upon the capabilities of the land. Subsequently, the human factors like, length of occupation of the area, density of population, social and economic factors (especially systems of land tenure) and the technological levels of the people determine to an appreciable degree the extent to which the physical capacities of land are utilized (Dantewala, M.L. & Donde, W.B., 1965).

Shahganj Tehsil presents a complex pattern of physio-cultural elements and the land use pattern is the cumulative outcome of historical events, the interaction of economic forces with the natural environment and the values of society. (Table 4.1)

TABLE 4.1

SHAHGANJ TEHSIL: LAND-USE PATTERN

S.NO	LAND-USE	AREA (IN HECTARES)	(%)
1.	TOTAL LAND (CULTIVATED)	57.223	80.98
2.	UN-AGRICULTURAL LAND (WASTE)	3.858	5.46
3.	UNCULTIVATED LAND	9.582	13.56
	TOTAL:	**70.663**	**100.00**

SOURCE: Shahganj Tehsil - Milan Khasra, 1999-2000.

From the above table, it is clear that the land under cultivation is much higher in the study area. In contrast, the uncultivable wasteland is quite smaller. The table (Table 4.2) shows the changes that took place in the land use pattern over the last 51 years i.e. from 1950-51 to 2000-2001 and illustrated by fig. (Fig. 4.1).

CROPPING PATTERN:

Cropping patterns are the extent to which the arable land under different agricultural activities can be put to use. These largely depend upon the socio-economic

TABLE 4.2

DECADAL VARIATION IN LAND USE PATTERN IN SHAHGANJ TEHSIL (1951-2001)

S.N.	YEAR	TOTAL LAND IN HECT.	CULTIVABLE LAND IN HECTARE	%	CULTIVABLE WASTE IN HECTARE	%	NON CULTIVABLE IN HECTARE	%	IRRIGATED LAND IN HECTARE	%	DOUBLE CROPPED IN HECT.	%
1.	1950-51	70,663	47,655	64.44	15,263	21.60	7,745	10.96	25,805	54.15	11,990	25.16
2.	1955-56	70,663	49,181	69.60	12,832	18.16	8,649	12.24	25,529	51.91	13,131	26.70
3.	1960-61	70,663	52,029	73.63	11,454	18.21	7,179	10.16	26,279	50.51	23,980	46.09
4.	1965-66	70,663	50,418	71.35	11,821	16.73	8,423	11.92	25,511	50.60	15,403	30.55
5.	1970-71	70,663	50,403	71.33	11,836	16.75	8,423	11.92	25,519	50.63	15,443	30.64
6.	1975-76	70,663	57,167	72.41	11,327	16.03	8,169	11.56	27,834	54.40	6,748	13.19
7.	1980-81	70,663	53,944	76.34	8,204	11.61	8,575	12.05	31,557	58.50	19,150	35.50
8.	1985-86	70,663	54,013	76.48	7,822	11.07	8,798	12.45	31,842	58.92	21,158	39.15
9.	1990-91	70,663	54,792	77.54	6,741	9.54	9,130	12.92	32,420	59.17	28,588	52.12
10.	1995-96	70,663	56,050	79.32	5,314	7.52	9,299	13.16	37,397	66.72	35,541	63.41
11.	2000-01	70,663	57,223	80.98	3,858	5.46	9,582	13.56	42,654	74.54	41,407	72.36

SOURCE : District Census Handbook – 1961, District Census Handbook – Part-A-1971, District Census Handbook – Part-A-1981,
District Census Handbook – Part-A-1991
Statistical Report-1976, 1986, 1996
Shahganj Tehsil, Milan Khasra-1999-2000 and Shahganj Tehsil Jinswar, Rabi, Kharif and Zaid – 1999-2000

SHAHGANJ TEHSIL
LAND USE PATTERN
(CHANGES. DURING 1951- 2001)

CUMULATIVE PER CENT OF AREA

YEARS

- - - - - - - DOUBLE CROPPED AREA
·—·—· · · —· · — · · · — AGRICULTURAL LAND
· · · · · · · · CULTIVABLE WASTE
— · — · · — · — NOT CULTIVABLE
— — — — IRRGATED AREA
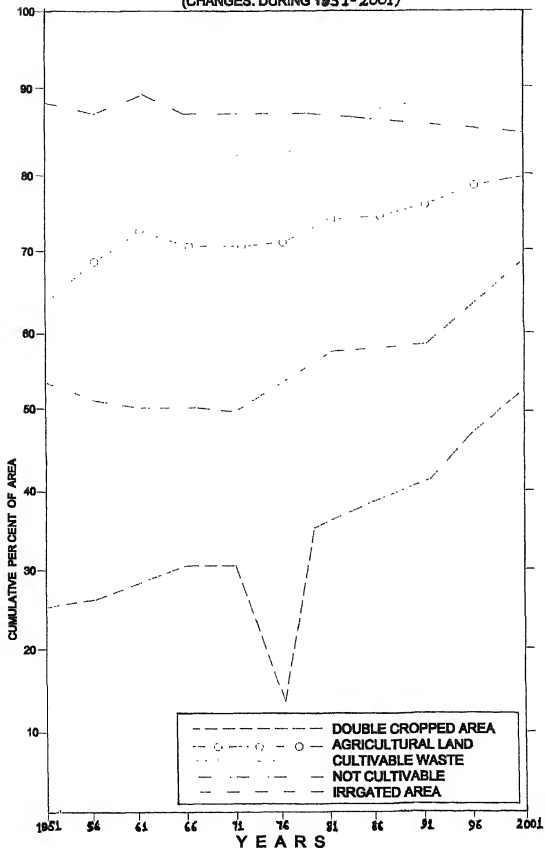
Figure 4.1

influence, which determine the possibility of the enterprise the farmer chooses and the input intensity with which he farms. According to 'V.R. Singh', (1979) with an assured supply of water and availability of modern inputs-specially high-yielding varieties of seeds and chemical fertilizers-it becomes possible for the farmers to replace less profitable crops with more profitable ones and also to enhance the intensity of the use of the available land by growing two or even 3 crops in the same field in a year. A study of cropping pattern of any region should logically begin with a study of its climatic and soil conditions, which constitute the regional and subterranean environment of crop plants (Krishnan and Singh, 1972). The cropping pattern of a large number of regions in India is typical of an underdeveloped agricultural economy in which most of the cultivated area is devoted to subsistence food grains crops (Fig 4.2). These are mainly produced for domestic consumption and local markets where the surpluses are traded immediately for the domestic and farm necessities. The cropping pattern of the tehsil typifies the underdeveloped economy in which most of the agricultural land is devoted to the cultivation of food crops meant for local consumption, while the cash crops constitutes a negligible percentage of the cropped area. There are regional variations in the cropping pattern. Variations in the cropping patterns are also related to spatio-temporal variations in rainfall characteristics. Areas of low and unreliable rainfall always support millets and pulses, in humid areas rice cultivation obviate the culture of other crops. Thus, the higher the intensity of irrigation, lesser is the area under millets and pulses and greater the area under fine food grains, industrial crops and the likes. There are 3 crop seasons in the study area viz. Kharif, Rabi and Zaid but the first two play a very important role in the tehsil's agricultural economy. The Bhadai crops like quick growing rice, millets, maize, sawan etc., which form the principal foodstuff in the diet system of the poor people, provide, however, a better help against the mischance of the indefinite season (Fig. 4.2).

KHARIF CROPS:

Starts from July and ends in the mid November. The Kharif crops jointly account for about 50.5 percent of the total cropped area in the region. The principal kharif crops grown in the area are Paddy, Millets, Maize, Urd, Moong, arhar etc. The production cost of crops is fairly low as compared to Rabi crops, as they require small quantities of seeds, fertilizers and other inputs and almost no irrigation if the monsoon rains are timely. As regards the acreage under various kharif crops, Paddy shares the highest percentage followed by Maize, Arhar, Jowar and Bazra respectively of the total cropped area. The spatial variation of cropping pattern is shown in table (Table 4.3) that presents a mixed pattern.

TABLE 4.3

CROPPING PATTERN OF KHARIF SEASON IN 1999-2000 (IN HECTARES)

SNO.	BLOCKS	PADDY	JOWAR	BAJRA	MAIZE	ARHAR
1.	SUITHAKALAN	8992	81	81	1700	323
2.	SHAHGANJ	12673	29	13	2246	291
3.	KHUTHAN	6087	257	77	4299	612

SOURCE: Shahganj Tehsil - Milan Khasra, 1999-2000.

CROPPING PATTERN

Figure 4.2

CROPPING PATTERN

SHAHGANJ TEHSIL

Figure 4.2

90
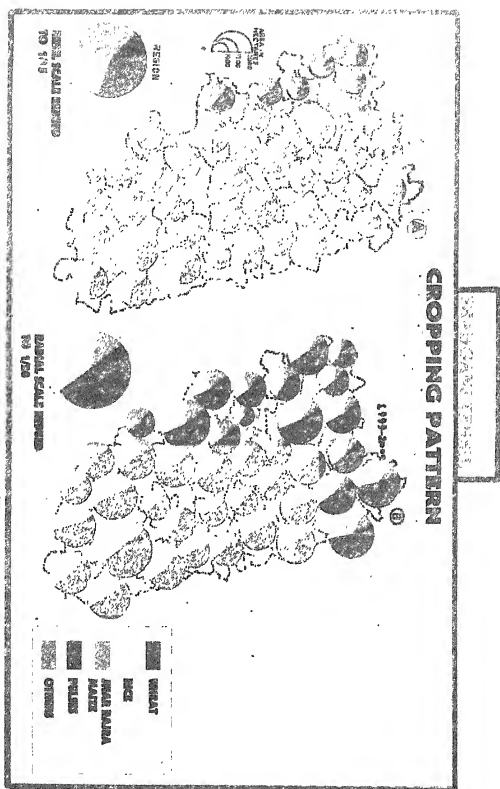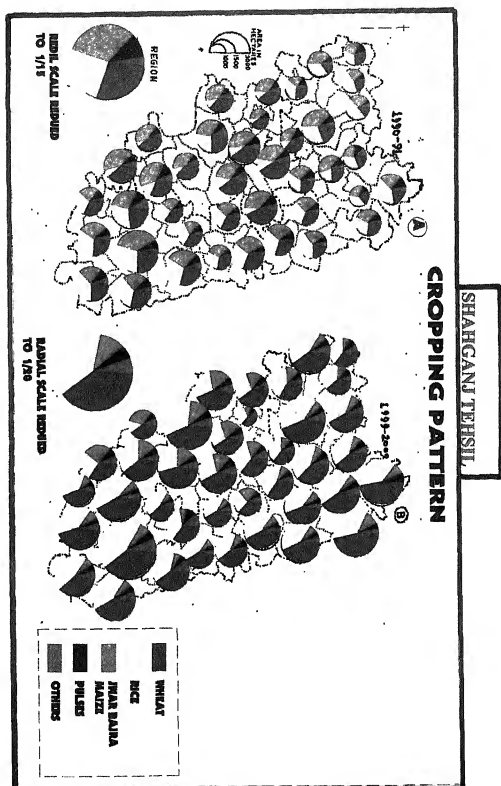
The highest acreage of Paddy is 12673 hectares recorded in Shahganj block, while the lowest is 6087 hectares recorded in Khuthan block (Table 4.3). Similarly the highest acreage under Jowar is 257 hectares in Khuthan and the lowest is 29 hectares recorded in Shahganj block. Likewise, the highest acreage under bajra, maize and arhar are 81 hectares, 4299 hectares and 612 hectares recorded in Suithakalan and Khuthan block respectively, while the lowest acreage are 13 hectares, 1700 hectares, and 291 hectares recorded in Suithakalan and Shahganj respectively (Table 4.3) and illustrated by fig. (Fig. 4.3).

However, the tehsil's total acreage under these crops shows a steady rise in acreage under paddy and jowar, while the temporal variation under bazra, maiza and arhar are slight and insignificant (Fig 4.3-A).

RABI CROPS:

This season formally begins around mid-November and lasts up to March and thus, the entire process of Rabi Cropping from sowing to the harvesting and threshing takes about four and a half months to finish. The preparation of fields for Rabi crops requires light irrigation in order to add moisture to the topsoils to expedite the early germination of the crops. The preparation of the fields for sowing starts in late October and continues up to mid-November, but the sowing of major Rabi crops like wheat, barley, gram etc. formally begins in the first or second week of November. This practice in the study area is called **"Palewa"** meaning light watering of the topsoils. The actual sowing of the Rabicrops starts in mid-November and continues up to mid December, sometimes,because of the late harvesting of the kharif crops and mostly because of the irrigation problems. The principal crops of Rabi cropping season are wheat, barley, gram, peas, masoor, potatoes etc. These crops jointly account for about 48 percent of the total cropped area in the study region (Table 4.4). Wheat is the major crop of Rabi season in the study area followed by Redgram, Potato and Barley.

TABLE 4.4

CROPPING PATTERN OF RABI SEASON IN 1999-2000 (IN HECTARES)

S.NO	BLOCKS	WHEAT	GRAM	BARLEY	POTATO
1.	SUITHAKALAN	8862	407	219	442
2.	SHAHGANJ	13576	333	124	382
3.	KHUTHAN	8856	398	244	482

SOURCE: Shahganj Tehsil - Milan Khasra, 1999-2000.

As regards the spatial pattern of Rabi crops, greater acreage under wheat occurs Shahganj block (13576 hectares), while the lowest occurs in Khuthan block (8856 hectares). The highest acreage of barley occurs in Khuthan block (244 hectares), while the lowest occurs under Shahganj block (124 hectares). Similarly, the highest acreage under redgram and potato occurs in Suithakala block (407 hectares) and Khuthan block (482 hectares), while the lowest acreage under the above occurs in Shahganj block (333 hectares) and (382 hectares) respectively. The acreage under wheat and potato shows a positive variation while that under barley and gram shows a negative change (Fig 4.4).

SHAHGANJ TEHSIL
CASH CROPS – PULSES ETC.

Figure 4.3

SHAHGANJ TEHSIL
CASH CROPS – MAIZE &
CEREALS

1990-91 Ⓐ

Ⓑ 1999-2000

PERCENT OF TOTEL
CROPPED AREA
20 - 24
24 - 28
28 - 32
> 32

PERCENT OF TOTEL
CROPPED AREA
< 8
8 - 14
> 14

CEREALS

1990-91 Ⓒ

Ⓓ 1999-2000

PERCENT OF TOTEL
CROPPED AREA
< 25
25 - 35
> 35

PERCENT OF TOTEL
CROPPED AREA
< 91
91 - 94
> 94

Km

Figure 4.3 A

93
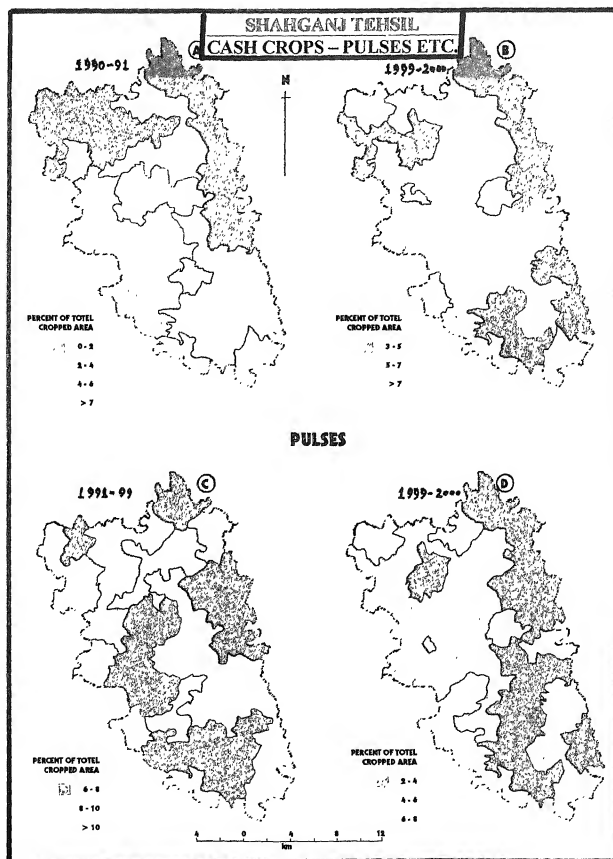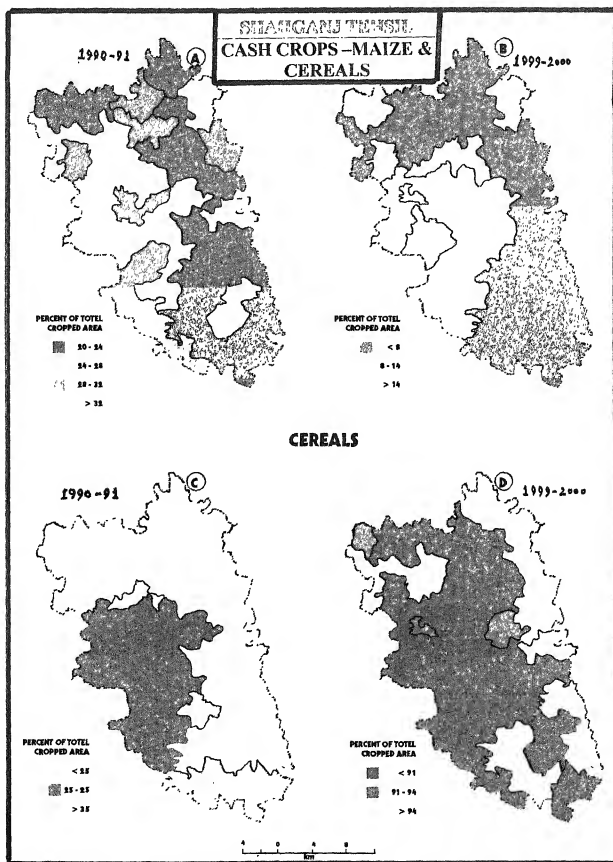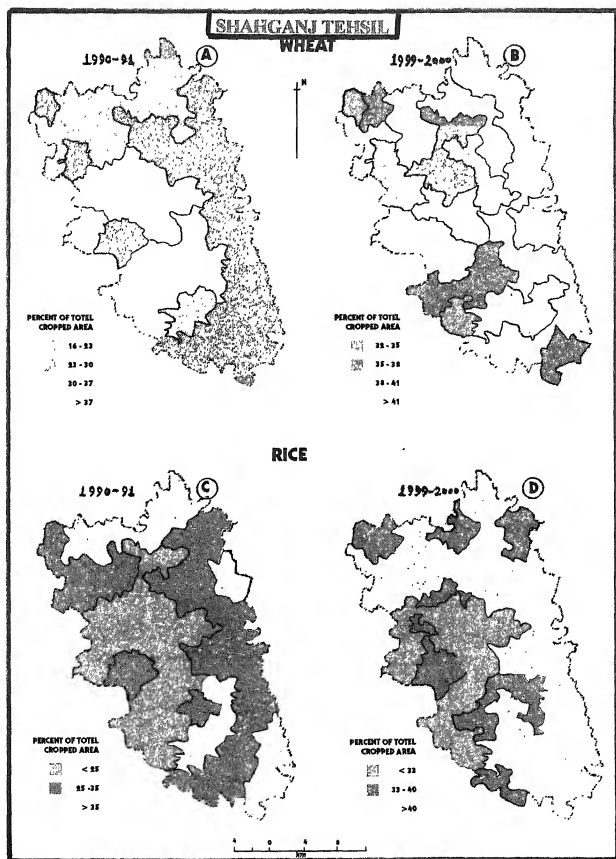
Figure 4.4

ZAID SEASON:

This season includes the period from April to June. The principal crops are Maize, Moong, Urd and a variety of vegetables, which jointly account for 1.5 percent of the total cropped area. The total acreage under these crops is irrigated by tube wells, pump sets and canals. The acreage under these crops was almost negligible but during the last one decade due to the growing population size the acreage under these crops has considerably increased. However, the greater percentage of acreage under zaid crops is concentrated around the service centres, which testifies to the fact that these service centres can play a significant role in promoting the cultivation of zaid crops in their vicinal areas. The increase in acreage under paddy, wheat, potato etc. attests the positive role of service centres in influencing the cropping pattern in the study region, because the crops in question form the staple diet of the growing resident population and hence, their great demands.

USE OF IMPROVED SEEDS, FERTILIZERS AND IMPLEMENTS:

Seeds are the basic inputs in the farming activity. The quality of seeds determines the level of germination and growth of plants and for that matter, the production and productivity of crops. The improved and H.Y.V. seeds are contrasted to ordinary seeds, ensure better germination, growth and productivity; hence their use in the farming is sine-qua-non for better returns in the agricultural sector. The use and distribution of H.Y.V. (High Yield Variety) seeds in the tehsil has fairly increased from 1999 to 2000 as in the table (Table 4.5) mentioned below.

TABLE 4.5.

H.Y.V. SEEDS AND FERTILIZERS STORES IN SHAHGANJ TEHSIL (1999-2000)

		SEEDS			FERTILIZERS	
SNO.	BLOCKS	STORE NO'S	CAPACITY	STORE KNOWS.	CAPACITY
			(M.T.)		(M.T.)
1.	SUITHAKALAN	2	150	8	800
2.	SHAHGANJ	3	200	11	1100
3.	KHUTHAN	3	200	10	1000

SOURCE: District Statistical Bulletin Jaunpur and State and Planning Institute U.P. 1999-2000

Manures and fertilizers play the same part in relation to the soil as food in relation to the body. Just as a well-nourished body is capable of the maximum effort, well nourishes soil will have the best fertility (Dubey, R.N. and Negi, B.S., 1968). Since the land is limited, it is high time that more fertility in fields and less fertility in the home should be given priority (Singh, R.L., 1971). The limited cultivable area and the mounting pressure of population however, necessitate the increase in the per acre yields of the crops. The green or animals manure fairly improve the physical condition of the

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crops, while the chemical fertilizers increase the supply of essential nutrients like nitrogen, phosphorous and potash to the soils (Mishra, B.N., 1992). The soils of the district require frequent manuring for raising good harvest.

The use of chemical fertilizers in the tehsil has increased from 102.4 kgs per hectare in 1991 to 106.9 kg per hectare in 1999. The block wise figures are shown in table (Table 4.6) that also attests this fact. The distribution of Nitrogenous, Phosphates and Potassic fertilizers in various blocks as shown in table (Table 4.7) and the distribution centres are located in various service centres.

TABLE 4.6
USE OF FERTILIZERS IN SHAHGANJ TEHSIL KG/HECTARE

SNO.	BLOCKS	1990 – 91	1993-'95	1997-'99
1.	SUITHAKALAN	100.2	95.6	106.2
2.	SHAHGANJ	104.5	105.5	106.6
3.	KHUTHAN	102.7	118.6	107.8
	TOTAL AVERAGE:	102.4	106.5	106.9

SOURCE: District Statistical Bulletins Jaunpur, State Planning Institute U.P. 1991 , 1995 and 1999.

TABLE 4.7
DISTRIBUTION OF FERTILIZERS IN SHAHGANJ TEHSIL 1999-2000(IN MT.)

SNO.	BLOCKS	NITROGEN	PHOSPHOROUS	POTASH
1.	SUITHAKALAN	1818	565	160
2.	SHAHGANJ	1711	859	264
3.	KHUTHAN	1842	584	134
	TOTAL	5371	2008	558

SOURCE: District Statistical Bulletins Jaunpur and the State Planning Institute U.P. 1999-2000

Similarly the use of sophisticated agricultural implements has also increased over the years (Table 4.8) and their distribution is being done at various growth centers. But this is far short of the need. However, they can be made to play a commendable role in promoting the use of HYV seeds, chemical fertilizers and implements in the Shahganj Tehsil.

TABLE 4.8

**USE AND AVAILABILITY OF AGRICULTURAL IMPLEMENTS IN SHAHGANJ
TEHSIL IN (1999-2000)**

S.N	BLOCKS	WOODEN PLOUGH	IRON PLOUGH	SPRAYER MACHINE	THRESHI NG	TRACTOR S
1.	SUITHAKALAN	9981	1502	70	1230	170
2.	SHAHGANJ	16642	5985	100	1340	156
3.	KHUTHAN	13669	3061	88	1970	168
	TOTAL	40292	10548	258	4540	494

SOURCE: District Statistical Bulletin Jaunpur and the State Planning Institute U.P., 1999-2000

IRRIGATION:

The gross anomaly, and uncertainty involved in the incidence, amount and distribution of rainfall, has always necessitated the artificial watering of crops in the Tehsil. The irrigation invariably plays a decisive role in the agricultural economy, because it serves the dual purpose, by safeguarding the crops against the damages and destruction done due to failure of monsoon rains and by increasing the yield of crops even in normal years (Kayastha, S.L., 1970).

The government and private tube wells and pump sets stand out as major sources of irrigation, which account for about 73.73 percent of the total irrigated area (Fig. 4.5). The other sources of irrigation in the tehsil are Canal, Wells, Tanks and others (Table 4.9).

However, missionary wells are used to irrigate about 18.2 percent of the total irrigated area in 1980-81 but their share has considerably gone down due to dense network of canals and govt-subsidised private tube wells (Fig. 4.6).

TABLE 4.9

IRRIGATED AREA IN SHAHGANJ TEHSIL (1999-2000)

S.NO.	BLOCKS	TOTAL SOWN AREA	NET IRRIGATED AREA	AREA % NSA	TOTAL IRRIGATED AREA	AREA % OF TSA
1.	SUITHAKALAN	2,33,946	10,577	69.3	12,459	52.0
2.	SHAHGANJ	32,718	14,327	63.6	18,060	55.2
3.	KHUTHAN	23,758	9,559	67.1	11,812	49.7

SOURCE: District Statistical Bulletin Jaunpur, 1999-2000.

Figure 4.5

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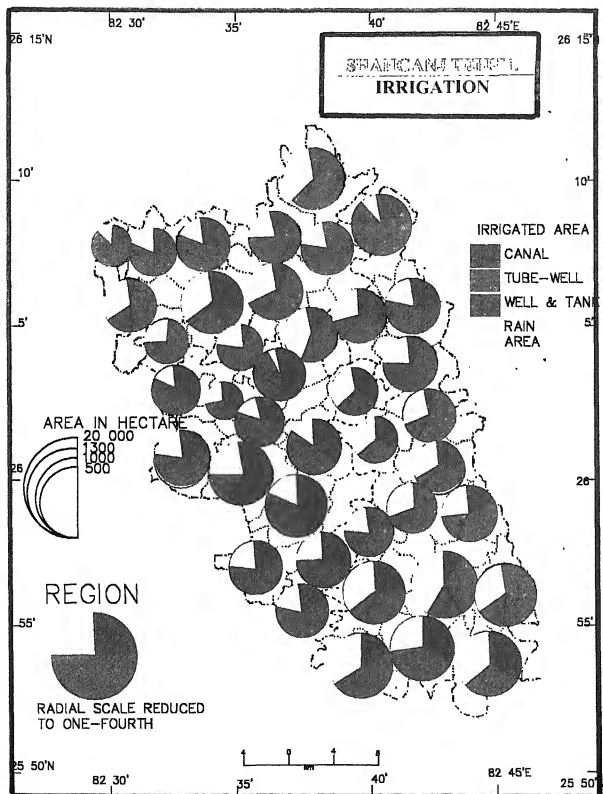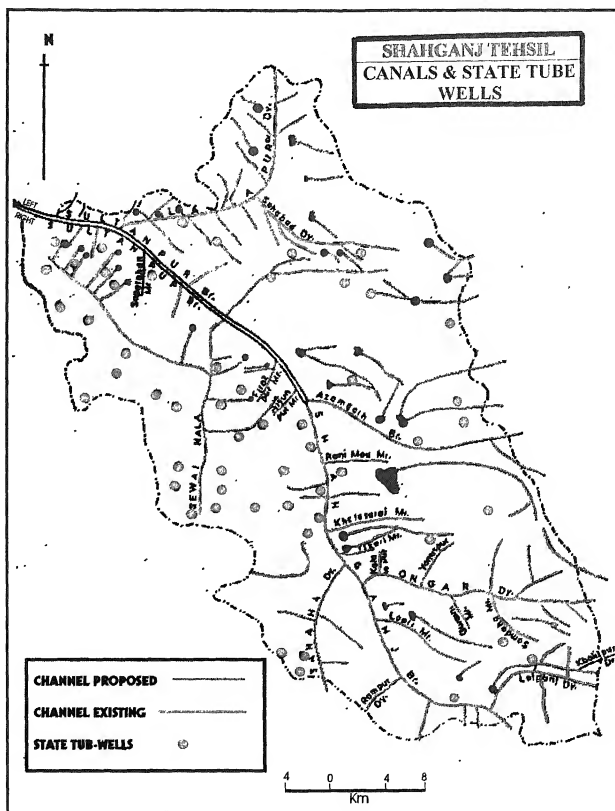
Figure 4.6

The extent of irrigated areas and network of irrigation facility have marginally increased over the years mainly because of two reasons:

(i) Growing demand for foods, agricultural seeds, vegetables etc. caused by the growing pressure of population.

(ii) Some facilities for installation of private means of irrigation although not up to the desired level, are available at few growth centres under various government schemes.

Few service centres are also providing a variety of other functions like financial assistance, storage facilities and marketing services etc. for the development of agricultural sector in the tehsil. If planned these centres can play a significant role in promoting the cause of agriculture in the study region.

CROP COMBINATION:

Pattern of crop combinations in any region, exhibit several well-marked regions of crop production associations. They may be demarcated within the primary crop production zones. The crop combination indices will provide grounds for understanding the contemporary crop sequences practiced by the farmers. Besides, crops are grown in association, either because they are supplementary to each other owing to different growth requirements. Physical, economic and cultural determinants generally operate in combination in a region and since they influence the crop distribution, the crop production associations are necessarily dependent on them. This technique produces better yield per unit of land and increases the cropping intensity. It is made possible by sound agricultural infrastructure, availability of required inputs and labour, and the necessary skill and farm management. The greater the area of the multiple cropping the greater the production and productivity and better will be the income, economy and living standard of the farmers.

In Shahganj Tehsil, the highest incidence of crop combination is seen in Suithakala block, while the lowest in Shahganj block as a result of which cropping intensity in Suithakala block ranges to 156.91 percent and in Shahganj block the corresponding figure is 145.18 percent.

CROPPING INTENSITY:

As regards the spatial pattern of the cropping intensity, there are two categories of cropping intensity ranging from 156.91 percent to 145.18 percent via Low and Medium. High cropping intensity is seen in Khuthan block in the study area.

TABLE 4.10

CROPPING INTENSITY IN SHAHGANJ TEHSIL (IN %)

S.NO.	BLOCKS	1990 – 91	1995 – 96	1999 – 2000
1.	SUITHAKALAN	150.23	158.83	156.91
2.	SHAHGANJ	137.98	149.54	145.18
3.	KHUTHAN	148.88	161.74	166.69

SOURCE: District Statistical Bulletin Jaunpur, 1999-2000.

The variation in the cropping intensity in Shahganj Tehsil has been shown in the above table. Almost all the development blocks have recorded positive variation in cropping intensity from 1991 to 2000. Suithakalan and Khuthan recorded the moderate change, while Shahganj experiences a low change in its cropping intensity. The major reason causing such variation in intensity is increment in the number of private tube wells, greater percentage of irrigated area and high incidence of zaid cropping. In addition, the growing demand for variety of good grains and cereals and several kind of vegetables particularly by the growing population of the service centres have promoted the practice of crop combination and thereby increased the cropping intensity in most of the blocks.

CROP CONCENTRATION:

The analysis and the description of the spatial distribution of various crops is only qualitative and does not yield a clear and accurate picture of the degree of concentration of various crops in different parts of the study region. The qualitative approach of describing the spatial pattern of various crops is useful only for a general understanding of the distributional aspects of the crops and the agricultural types. But, it is not useful for agricultural planning, which requires accurate values of crop distribution in a region. Hence, to measure crops in the region quantitatively and objectively, the concept of "Crop Concentration" has been used. The concept of crop concentration enables one to compare and access different crop distributions, on a uniform scale, with the help of such a method one can arrive at meaningful generalization in crop geography of an area. One can identify crops or livestock or agricultural enterprises, which are highly localized as against the more widespread ones in their distribution.

The most popular statistical technique which has been used by several scholars like Florence (Spate, O.H.K. & Learmonth, A.T.A., 1967), Chisholm (Dubey, R.N. & Negi, B.S.), Bhatia (Spate, O.H.K. & Learmonth, A.T.A., 1967) etc. to measure the concentration of various crops in different regions, is the "Location-Quotient"or by "Cofficient of Localization". In the present study, the 'Location Quotient' techniques as modified by Singh (Singh, Jasbir & Dhillon, S.S., 1991) have been used to measure the concentration of various crops in the study area. The concept of 'Concentration' enables one to compare and associate different crop distributions on a uniform scale. The equation of 'crop concentration Index' is expressed as under:

$$C_i = \frac{P_{ae}}{P_{ar}} \times 100$$

Where, C_i = is the crop concentration index or the location quotient.
P_{ae} = is the percentage of the crop 'a' to the total harvest area in an enumeration unit 'e'.
And, P_{ar} = is the percentage of the crop 'a' to the total harvested area in the entire region 'r'.

Using the above formula, the crop concentration index of various crops has been derived for all blocks of the study area and has been shown in the table (Table 4.11) given below.

TABLE 4.11

**CROP CONCENTRATION INDEX OF VARIOUS CROPS IN SHAHGANJ TEHSIL
1990-1991 (IN %)**

S.NO.	BLOCKS	WHEAT	PADDY	MAIZE	GRAM
1.	SUITHAKALAN	82.33	168.41	72.11	66.03
2.	SHAHGANJ	83.09	151.86	80.00	66.62
3.	KHUTHAN	94.63	112.48	106.22	76.48

SOURCE: District Statistical Bulletin Jaunpur, 1990-1991.

The spatial variation and the temporal variation in the concentration of 4 crops namely paddy, wheat, gram and maize has been illustrated in the above table. The higher concentration values of paddy are found in Suithakala and Shahganj block. However, the greatest negative change from 1990 to 1991 has been recorded in the paddy concentration. The greatest concentration of wheat is found in Khuthan block whereas, lowest is found in Suithakalan block. However, the highest concentration of maize and gram are found in Khuthan block whereas, the lowest is found in Suithakalan block respectively.

TABLE 4.12

**CROP CONCENTRATION INDEX OF VARIOUS CROPS IN SHAHGANJ TEHSIL
(1999-2000) (IN %)**

S.NO.	BLOCKS	WHEAT	PADDY	MAIZE	GRAM
1.	SUITHAKALAN	93.45	138.51	58.61	56.87
2.	SHAHGANJ	104.78	142.88	35.09	54.92
3.	KHUTHAN	94.13	95.51	57.77	53.67

SOURCE: District Statistical Bulletins "JAUNPUR" 1999-2000.

However, the concentration values of wheat have considerably increased in three blocks from 1991 to 2000. However, all the three blocks have experienced negative change from 1991 to 2000 in Maize and Gram production.

However, in general the concentration of the above four crops shows an appreciable rise during 1999 to 2000 in those blocks, where the service centres are showing a greater increase in their demographic and functional dimensions. A variety of pre-harvest and post-harvest facilities available in various service centres in the study area have led to the higher concentration of these crops, which form the staple diet in the entire region.

CROP DIVERSIFICATION:

The concept of crop diversification is contrasted to the concept of crop specialization or monoculture, which implies the monopoly of a certain crop or agricultural activity in a region. The diversification of the crops signifies the cultivation

of multiple crops in a particular area or a region. The agricultural diversification has now been accepted as an important feature of the stable and progressive agricultural systems of the world. In general, the agricultural diversification has been promoted by a variety of physical, social and economic factors, but in particular, this has been made possible by modern irrigation, use of H.Y.V. seeds, fertilizers and pesticides, and the use of modern machines and farming practices. There are other factors also like vagaries of weather, dependence of farmer on agriculture for their multiple requirements and the orthodox and traditional outlook of the farmers, which have contributed a lot to the promotion, and popularization of crop diversification in India. Besides, the diversification of agriculture is also important in view of the steep rise in cost of farm inputs.

To find out the spatial pattern of crop diversification in the study region the formula modified by 'Singh' has been used here. The equation is known as the "Index of Crop Diversification" and is expressed as follows:

$$D_i = \frac{P_{an}}{N}$$

Where, 'D_i' = is the index of Diversification.

'P_{an}' = is the percentage of total harvested area under 'n' crops, and

'N' = is the number of crops under consideration.

It may be inferred that lower is the value of the index, higher is the degree of crop diversification and vice-versa. The spatial pattern and temporal variation in the crop diversification values has been illustrated in fig. (Fig. 4.7) and table (Table 4.13), which show the medium diversification value in Shahganj block i.e. 17.66 percent in 2000.

TABLE 4.13

COMPARATIVE STUDY OF
CROP DIVERSIFICATION IN SHAHGANJ TEHSIL (IN %)

		1999 - 2000		1990 - 1991	
S.N.	BLOCKS	TOTAL AREA IN CROP	CROP DIVERSIFICATION	TOTAL AREA IN CROP	CROP DIVERSIFICATION
1.	SUITHAKALAN	20,011	16.71	20,393	15.37
2.	SHAHGANJ	28,883	17.66	19,656	15.49
3.	KHUTHAN	19,678	16.57	17,017	15.29

SOURCE: District Statistical Bulletin Jaunpur and the State Planning Institute U.P.

Suithakalan and Khuthan too have experienced medium to low diversification value. Due to predominance of wheat, paddy, gram and maize in these blocks the diversification values have gone down. However, the growing demand for food grains and vegetables in these areas has a direct bearing on the types and number of crops grown in the region.
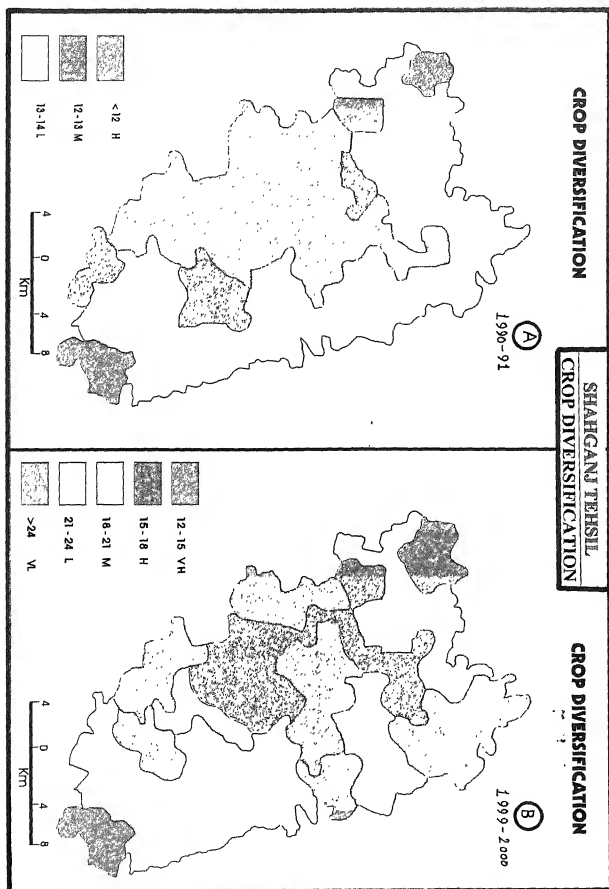
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Figure 4.7

PRODUCTION AND PRODUCTIVITY:

The production and productivity of crops are determined by various physical and cultural factors like relief, drainage, climate, soils, demographic size and characteristics, skill and technology, income etc. in a region. However, the production and productivity of various crops in the tehsil depict that production and productivity of paddy, wheat, maize, gram, potato and mustard have considerably increased from 1991-2000.

The crops regarding the negative change in the production and productivity are millets, arhar, barley, peas, sugarcane etc. These changes have taken place due to the growing demand for cereal, edible oils and vegetables in the tehsil. However, various facilities for growing these crops are available in the central areas, and they have appreciably promoted the cultivation of such crops as are in high demand in the region. The dissemination of modern and innovative farm technology by the service centres to their surrounding areas have also contributed a lot in increasing the productivity and production of various crops in the study region.

GOVERNMENT SPONSORED PROGRAMMES FOR AGRICULTURAL DEVELOPMENT:

A variety of agricultural development programme s launched by the Government are operating in the Tehsil. These are basically aimed at increasing the production and productivity of various crops ensuring the availability of input facilities to farmers, creation of infrastructural facilities, development of animal husbandry, dairying, fisheries, forestry etc.

The Government of INDIA has also launched various developmental schemes such as:

(i) I.R.D.P.

(ii) Jawahar Rojgar Yozna.

(iii) Panchyati Raj.

(iv) S.F.D.A. etc.

However, the achievements recorded under these development programmes are quite meager and far from the desired expectation. These programmes have failed to deliver goods due to the operational constraints and bottlenecks like the apathy of the concerned officials, bureaucratic centralism, political interference, lack of interaction between the official and beneficiaries, venality of officers, lack of skill and enterprise in farmers, lack of adequate finance etc.

PROBLEMS OF AGRICULTURAL DEVELOPMENT:

The temporal and spatial analysis of various aspects of agriculture in Shahganj Tehsil reveals that the agriculture sector is gradually picking up here, but in view of the growing demands of a growing population, the pace of agricultural development is not up to the mark. There are various problems and constraints, which hinder the growth of agricultural sector. These problems are listed below:

(i) Although the tehsil has high percentage of cultivated area, but the sizeable portion of it is handicapped with the physical problems like soil erosion, soil degradation, usarization, water logging, skill constraints etc.

(ii) Natural calamities like flood, drought, hailstorm, frost etc. also badly damage the standing crops almost every year. The effective controls and checks of these calamities may lead to significant results in the farming sector. The ignorance of farmers about the weather conditions also adds to this problem.

(iii) The input facilities like improved seeds, insecticides, fertilizers etc. and implements are available only at a few service centres and are costly. Hence, farmers can hardly afford to use them.

(iv) About 50 percent of the total area is irrigated and the remaining unirrigated. This also led to reduction in production and productivity.

(v) The infrastructure facilities like power supply, agricultural credit and finance, rural banks, land development banks, godowns, agricultural marketing etc. are only few and far between. Due to this the development of agricultural sector in the Tehsil has been adversely affected.

(vi) The cropping intensity and the agricultural efficiency are although gradually showing up, but they are far short of the requirements. Besides this, the land-capital productivity too, is very low.

(vii) Due to the growing population, the pressure of farm labour is increasing, but they hardly find full time employment in the agriculture sector. As a result, most of them try to migrate to the urban areas in search of jobs and employment.

(viii) The state of animal husbandry, dairying, fisheries, forestry, poultry etc. is also not of good quality due to the indigenous breeds of the cattles, poor animal feed, poor conditions of keeping, and non use of innovative techniques etc.

(ix) Lack of education, skill and enterprise, among the farmers is also a great draw back in the development of agricultural sector in this area.

SPATIAL PLAN FOR AGRICULTURAL DEVELOPMENT:

From the above discussions, it is evident that there are vast potentialities for agricultural development in the study area, but to utilize these potentials, some necessary changes and modifications have to be made particularly in the:

(i) Land use pattern.

(ii) Cropping pattern.

(iii) Farming practices.

(iv) Infra structural and input facilities, and

(v) Outlook and attitude of farmers etc.

The network of the planning units and their tributary areas can be fruitfully utilized for the locational planning of various agricultural functions. Therefore, in view of the problems of agricultural development in the area, some suitable and practicable policy suggestions for agricultural planning are being made and a spatial plan for the location of the agricultural activities is being presented here, which if honoured will go a long way in eradicating the problems and bottlenecks and pave the way for viable and accelerated developments of agricultural and allied activities in this region-

(i) To tone up the agricultural development process in the study area, the first and foremost priority should be given to expanding the agricultural area by bringing more and more lands, which are lying waste and idle like areas handicapped with soil erosion, soil

degradation, water logging, reed infestation etc. under the cultivation. These problems need to be arrested soon and the land should be reclaimed for agricultural utilization.

Besides, the deficiency of critical minerals and nutrients in the soils and their fertility levels should be accurately ascertained through the testing of soils of different parts of the study area and adequate measures like green manuring, compost manuring etc., should be adopted to recoup and maintain the fertility of the cultivated lands.

(ii) The existing network of irrigation facilities should be expanded to match the present and future demands by opening new canals and distributaries, drilling and boring tube wells, installing pump sets, digging wells and tanks, wherever possible and necessary.

(iii) The existing agricultural land-use pattern should be changed and modified in accordance with the fertility of various soils and availability of irrigational facilities in particular, and consumption and demand pattern and cost-benefit pattern in general. This will ensure better utilization of soils and irrigational resources and will increase the income and yield of the farmers.

(iv) Similarly, the cropping pattern in Kharif, Rabi and Zaid seasons should also be adjusted accordingly keeping in view the quality of soils, availability of irrigation and pattern of consumption and demand.

(v) Cropping belts should be identified in the study area in accordance with the physical qualities of the land, proper uses of the soils and the availability of water (Mishra, B.N., 1992). Crops requiring good lands, soils and greater amount of water should be grown in the high-grade soil-water belt, crops with average requirements in medium-grade soil water belt, and the crops with lesser requirements in low grade-soil water belt. Those parts of the study area, which don't have enough amount of water or good quality of soil, should be utilized for coarse crops like millets, maize etc. A suitable crop combination and crop rotation should be practiced in the study region.

(vi) Use of improved farm inputs like H.Y.V. Seeds, chemical fertilizers, insecticides, sophisticated implements, etc. should be encouraged and promoted by giving demonstrations, education and proper training to the farmers. The present distribution system of agricultural help to the farmers is quite inadequate and irregular. For these facilities farmers have to cover a long distance, which consume much time, labour, cost and strain which poor farmers cannot afford.

It is, therefore, recommended that these facilities must be made available in adequate quantities at the nearest service centres in the study area.

(vii) The practice and the tradition of multiple and cash cropping should be encouraged by providing adequate irrigational inputs, storage and marketing facilities to ensure better utilization of land and human resources. This will help to improve the income and living standard of the farmers, and at the same time, it will enrich and strengthen the agricultural sector to meet its own demand as well as the demands of the manufacturing and service sectors.

(viii) The agricultural pricing should be streamlined and the exploitation of the farmers by middlemen, traders and merchants should be stopped by providing adequate marketing facilities for the sale and purchase of the agricultural produce at the nearest service centres, so that the farmers may get remunerative and adequate returns for their yields (Mishra, B.N., 1992).

(ix) The infrastructure facilities like storage, marketing, credit and finance, consultancy, etc., are also considerably short of the present demand and their distribution is also quite irregular. Hence, the effort should be made to locate these facilities in various orders of service centres from where they can be easily distributed to the farmers at least cost and effort. Adequate facilities for agricultural loans, credit and finance should be made available to the farmers by the concerned government agencies at convenient places i.e. service centres. To purchase the required inputs, the loans and credit facilities should be provided on soft terms and should be located in different service centres in the study area.

(x) For an ideal locational planning, for agricultural development in Shahganj tehsil, it is recommended that all the agricultural growth promoting activities including infrastructure, input, post harvest etc. should be located at various order of service centres identified in the area. As the service centres bear symbiotic relationship with their surrounding countryside, the location of various growth promoting activities will promote greater functional interaction between the centres and the countryside. Besides, the service centres will also act as potential markets for the sale and purchase of various agricultural products. Thus, the network, of service centres in the study area can play a significant role in promoting the cause of balanced agricultural development.

(xi) It is also important to review the scope and methods of agricultural planning to identify aspects, which would demand greater attention in the future, especially in long-term planning and development. Agriculture is taken as referring primarily to crop production, although, of course, animal husbandry, dairying, forestry and inland fisheries, at any rate, and policies bearing on improved nutrition should also fall legitimately within the scope of agricultural planning. Methods and concepts in planning can be viewed as a response to changing conditions and imperatives in agricultural development.

If the planning proposals listed above are honoured and effectively implemented in the right spirit, they will lead to self-supporting and sustainable agricultural development in the study area

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CHAPTER FIVE

SPATIAL PLANNING FOR INDUSTRIAL DEVELOPMENT

INTRODUCTION:

Industries no doubt form the keystone in the economy of a region, and in a vast country like India its importance is all the more pronounced. The tradition of industry in India is as old as the known history dating back to the 'Indus Valley civilization'. In those golden days India used to manufacture fine grades of cotton textiles, pottery, bronze articles, handicraft goods etc. The huge rust-free iron pillar near the Qutab Minar in Delhi indicates the early progress it had made in metallurgy. Till the 18th century, India was one of the leader in shipbuilding industry. It was also one of the most important destinations of gold that flowed in from all parts of the world in exchange for India's fine textiles, metal-wares, spices and a variety of other goods.

The rippling currents of Indian history yield substantial evidence about the general opulence of villages and flourishing village-industries like stone crafts, wood crafts, metal carving, utensils making, weaponry, ornaments and jewellery, handloom, handicrafts etc. In fact, these activities were seldom carried out as sheer economic pursuits simply for generating income and ensuring employment, but they were beautifully integrated in to the general life and cultural fabric of our nation. They were, frankly speaking, the carriers of our rich traditions and the bearers of canons of our value system. The elegant products of these industries are, even today, the paragon of excellence and beauty, and are stealing the show in various renowned museums of the world. But the glorious traditions of the village and cottage industries had to face a severe neglect and reluctance after the East India Company established its hegemony in the country. Later, with the beginning of organized and heavy industries in mid-nineteenth century, it received a stunning blow, which ultimately resulted in to ominous trends and waning demands for these goods (Mishra, B.N., 1989).

ROLE OF INDUSTRIES IN THE REGIONAL DEVELOPMENT:

An agrarian country like India, where about 70 percent population directly depends on agricultural sector, the development of agriculture should be so managed and organized that it automatically leads to the development of industrial sector. The industrial network, which is grafted in agricultural society forcibly from above leads to short term economic development. But owing to the lack of backward and forward linkages and proper feedback, it develops acute crackings in the long run and ultimately collapses leaving horrible fallouts on other sectors of economy and on the society as well. The industries are considered to be the harbinger of economic growth, social well-being and general prosperity, provided they spontaneously evolve out of the general process of economic development of a country and they are properly managed and planned.

Industries as outgrowths, instead of solving the socio-economic problems, complicate them. Hence, in order that the industries lead to self-sustaining growth and the lasting development, the care should be taken to ensure that the linkages are properly identified and the channels of feedback are clearly defined, the structural, organizational and operational factors are carefully planned and the industrial development is made an integral part of the general process of growth and development.

Thus, the consciously planned and carefully organized industrial development, recorded in full view of the existing resource-base of the country and the general socio- economic condition of the society, which it is meant for, plays a significant role

in promoting the cause of optimum resource utilization, expanding and diversifying the employment opportunities, improving the income and living standard of the people, arresting the exodus of rural labour-force to urban areas in particular and reducing the regional economic imbalances and accelerating the process of regional development in general (Nanjappa, K.L., 1973).

By the optimum industrial development, which is capable of producing self-sustaining growth in a region, is meant a stage of industrialization, which paves the way for full productive utilization of the local resource-base without producing any evil side effects viz. pollution hazards, degradation crisis etc. in the environment. The diversified structure of industries provides multiple opportunities for the utilization of various resources like water, vegetation, minerals, agriculture manpower, soils etc that would otherwise lie either unutilized or poorly utilized.

In the Primary Sector, oriented basically to the subsistence needs, the industrial use of the above mentioned resources not only increases their per unit value, but also promotes demand for their finished goods, which further increases their value and for that matter, ensures better returns to the owner. The industrial development sets in motion a process of commercial utilization of unused and inert resources like wastelands, water of ponds, lakes, rivers and a variety of mineral resources and turns them into wealthy and prized assets.

As regards the agricultural resources, there is, in fact a symbiosis between this sector and the industrial sector. The agricultural sector provides raw materials for the industries and the industrial sector supplies input for the agriculture. Raj Chakravarty and Vaidyanathan have attempted to explain sluggish growth of industrial outputs in terms of unsatisfactory performance of the agricultural sector. Manpower plays a dual role -(i) as an agent of production, and (ii) as a consumer of output in the economy of a country. This dual role is germane to the development of her economy. In what way and at what rate the economy is developing? Is judged by the nature and extent of its use. In under developing countries, where growth rates are slow, it has been seen that a large chunk of manpower remains employed more in the farm and less in the factory. It seems immaterial whether the farm gives a gainful employment or not (Sharma, D.P. & Desai, V.V., 1980).

It has become almost a truism that particularly all the economically less-developed countries are predominantly agricultural and all the developed ones have only a small section of their population engaged in agriculture. This holds true in case of India too, where a sizeable proportion of her labor force is still engaged in agricultural activities, which hardly utilize their full potentials and efficiency.

Thus, industrial development offers ample opportunities for the proper utilization of the capabilities and efficiency of the manpower. This pressure of population on agriculture has crossed all limits and has considerably strained the man-land relationship. Now there is a large surplus of manpower in the rural areas, which remains idle and inactive throughout the year and shares the meager income of the family, ultimately resulting in to acute poverty and low living standard. Industrialization in such conditions is a boon, as it provides employment and additional income to rural peoples. Thus, one of the main advantage of the industries particularly, small and rural industries, is that they provide immense employment opportunities to the masses. The decentralization of industrial efforts at village level would certainly galvanize and rev-up the process of rural development in the country and would ensure greater employment and participation of masses in the task of regeneration and growth of the economy.

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The hopes of creating employment by making capital investment in urban areas have not delivered goods. Now, the option of labour-intensive technology in densely populated area is the only alternative to attack growing problems of rural unemployment (Mishra, B.N., 1989).

Besides, the other, advantage of the rural industries is that, employment is provided in the natural setting of the workers own place, which is very important to him from social as well as economic point of view. The industrial developments in village areas directly helps to improve the income and the living standard of the villagers and thus, accelerate the process of removal of poverty, hunger, malnutrition, exploitation etc. from the rural areas (Mishra, B.N., 1989). In addition, the increased income of the people also promotes the cause of education, literacy, skills etc. in the rural areas and provides opportunities for the development of the latent capabilities, talents, arts and crafts of the rural people. In this way, the industrialization in the rural areas can effectively check the massive migration of the labour force from rural to urban areas, and also the growing problems of urban areas like slums and pollution.

The industrialization in the rural areas by providing diverse opportunities for proper utilization of rural resources, increasing employment opportunities, improving the income and living standard of the people and by accelerating the process of educational health and cultural developments may prove highly effective in reducing the regional economic imbalances, which is the main cause of all social, political, economic and cultural problems.

POTENTIAL FOR INDUSTRIAL DEVELOPMENT IN THE AREA:

Shahganj Tehsil possesses a great potential for the industrial development, because it has variety of industrial resources like vegetation products, agricultural products, live stock products, large population, infra-structural facilities etc., which are available in abundance throughout the area.

This opulence of natural endowment, of course, promises a bright prospect for the rural industrialization i.e. village and small-scale industries, based on local resources of the area. Besides, the existing infra-structural facilities and a variety of assistance and incentives provided by several government agencies and departments may also considerably support the process of industrial development of the area. However, the full potential can be utilized only when the government schemes aimed at the industrial development of the tehsil are implemented in the right spirit. A brief description of the industrial resources, infrastructure, incentives, and assistance is presented below:

INDUSTRIAL RESOURCES:

Among the main and important industrial resources found in significant quantities in the study area are sand, brick, clay, vegetal products, water resources, agricultural products, animal products etc

(i) SAND:

This is an important building material, which is used in building and construction. Although sand is found along the banks of almost all the rivers, but the good quality sand, which is used in masionary works, is found along the Gomati River particularly in Khuthan block. However, the whole quantity is used in the area itself.

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(ii) BRICK CLAY:

The study area has continuous stretch of deep and fertile clay deposited by the rivers. Due to the high fertility and for that matter, the high agricultural productivity, the entire area having thick deposition of clay is under cultivation. However, the clay found in this region has considerable adhesive capacity, which is a very important requirement for a soil to be moulded into bricks. The other quality is that it has sufficient mixture of fine sands, which prevent it from being sticky, which is also a good property for brick making. Besides, it is easily and abundantly available for manufacturing of bricks. The bricks are in a great demand in the urban areas in the industries and the rural areas too. To cater to these requirements, several brick-kilns are operating in Khuthan, Suithakalan and Shahganj blocks.

(iii) VEGETAL RESOURCES:

The vegetal cover in the Shahganj Tehsil totals to a meager 109 hectares, which is only 0.08 percent of the total reported area. This vegetal cover is scattered throughout the length and breadth of the Tehsil. The important vegetation types are monsoon deciduous trees namely Mango, Mahua, Accacia, Neem, Shisham, Holifig, Banyan etc. Palm and Bamboos are found scattered especially along the Gomati Rivers. These trees provide timber, logs, fuel, woods, leaves, flowers, fruits, gums, chemicals, herbs etc., which can be utilized as raw materials in a variety of village and small scale industries.

(iv) WATER RESOURCES:

The study area enjoys a monsoon type of climate and receives most of its rainfall during rainy season from the last week of June to mid October. As most of the rainwater is received during three months from July to September, the area faces frequent floods and considerable run-off leading to the wastage of a large part of the rainwater. If the flood and run-off water is impounded and stored in tanks and ponds it can productively be utilized for industrial and commercial purposes. Fortunately, the tehsil has a small network of water resources comprising Gomati river and Mangar river, several lakes and tals etc via Saida Tal in Khuthan area and a system of canal network.

In addition to this, there are a large number of wells (684) Tube-wells (38) and pump sets, which may also provide water for industrial uses. These water resources may not be used for industrial purposes and fisheries, agriculture, market gardening etc.

(v) AGRICULTURAL RESOURCES:

Agriculture, which provides the mainstay for the majority of our man-power, is one of the most resourceful sectors of our economy, which ensures the bulk of raw material supplies needed for accelerating the pace of rural industrialization in the country.

It is clear from the previous chapter that Shahganj tehsil produces a variety of agricultural items like wheat, barley, paddy, millets, gram, oilseeds, pulses etc., which can be utilized as raw- materials by various rural and agro-based industries like rice-mills, flour mills, dalia and pulse making units, oil crushing mills etc. Peas, Potato, Flowers and all types of vegetables are also grown in the area. Hence, several fruit preservation units may be established to use these products. The farming in the area is still at the intensive subsistence level and lacks in industrial tempo, entrepreneurship, enterprise and incentives. If agro-based small industries are installed in the area the demand for the agricultural items will increase and the farmers will be attracted to

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produce various crops in greater quantities, because that will ensure better and handsome returns to them (Fig. 5.1).

Thus, what is infact needed is to encourage the cultivation of the above items on commercial scale and to increase their production so that the growing food needs of the area are comfortably met and the surplus may be utilized as raw materials for rural and urban industries (Fig. 5.1-A).

(vi) HUMAN RESOURCES:

Shahganj Tehsil possesses a population of 4,47,350 persons including 2,34,277 males and 2,13,073 females according to 1991 census, resulting to a population density of 796.07 persons per sq.km and sex ratio of 890 females per 1000 males (1981). The rural population shares 86.73 percent and the urban 7.70 percent of the total population. The general literacy measures to 24.18 percent with 38.16 percent among the males and 10.13 percent in the females. Besides, the number of cultivators and the number of agricultural labourers approximately to about 95,253 and 20,867 persons respectively, which constitutes about 25.59 percent of the total population of the study area (Fig. 5.2).

In Shahganj tehsil, a sizeable portion of the labour force is engaged in the agriculture sector, while small percentage is engaged in manufacturing trade and transportation sectors (Fig.5.2-A). A considerably small percentage of Schedule Caste and Schedule Tribe population constitutes the total population of the study area. 21.22 percent of Schedule Caste and 0.05 percent of Schedule Tribe population constitutes the total population (Table 5.1 & 5.2) and illustrated by figure (Fig. 5.3). However, the area has a good number of weavers, craftsman, carpenters, blacksmith, washer man, tailors etc. who are thinly distributed in the villages, but this large manpower remains idle and inactive for most part of the year as agricultural sector has the limited capacity for giving employment to them (Fig.5.2-A). This large manpower, which is a great liability at present, can prove to be most valuable resource and can be fruitfully utilized in promoting the village and small-scale industries in the study area (Nichollas, W.H., 1970).

TABLE 5.1

LITERATES, SCHEDULED CASTES & SCHEDULED TRIBES POPULATION IN (%)

S.NO.	POPULATION	SC POP. TO TOTAL POP. IN %	ST POP. TO TOTAL POP. IN %	LITERATE TOTAL	TOTAL FEMALE	POP. MALE
1.	TOT. – 4,47,350	21.22 %	0.05 %	24.18 %	10.13 %	38.16 %
2.	RURAL – 4,36,125	21.63 %	0.05 %	23.76 %	0.79 %	37.80 %
3	URBAN – 11,125	7.15 %	0.00 %	38.74%	26.03 %	50 04 %

SOURCE: Statistical Bulletin, District Jaunpur, 1991

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SHAHGANJ TEHSIL
NON CULTIVABLE LAND

PERCENT OF TOTEL
LAND AREA

	6 - 9
	10 - 13
	14 - 18
	19 - 22
	23 - 26
	27 - 30

Km

Figure 5.1

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Figure 5.1-A

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Figure 5.2

Figure 5.2-A

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SHAHGANJ TEHSIL
SCHEDULED CASTES AND
TRIBES

PERCENT OF TOTAL
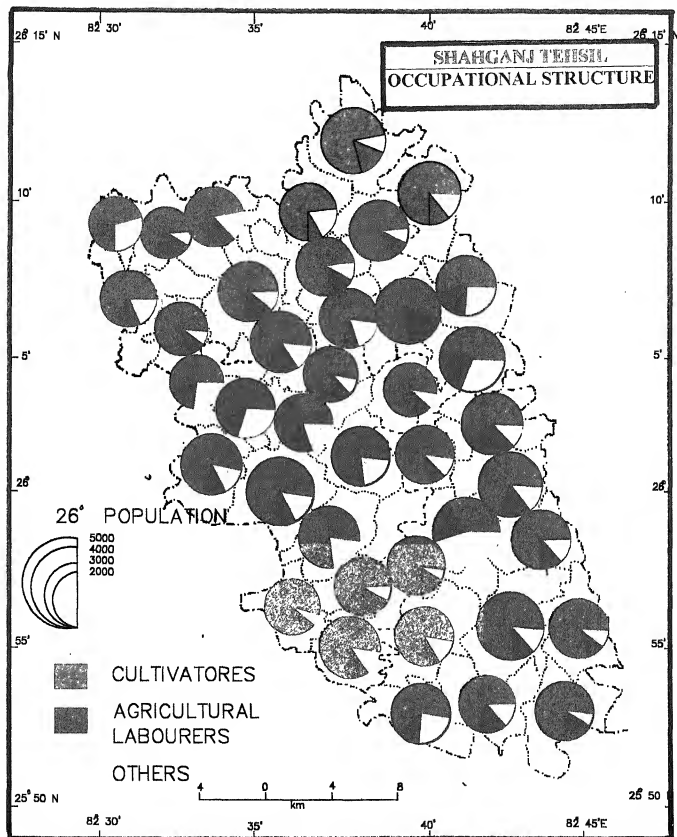RURAL S.C. & S.T
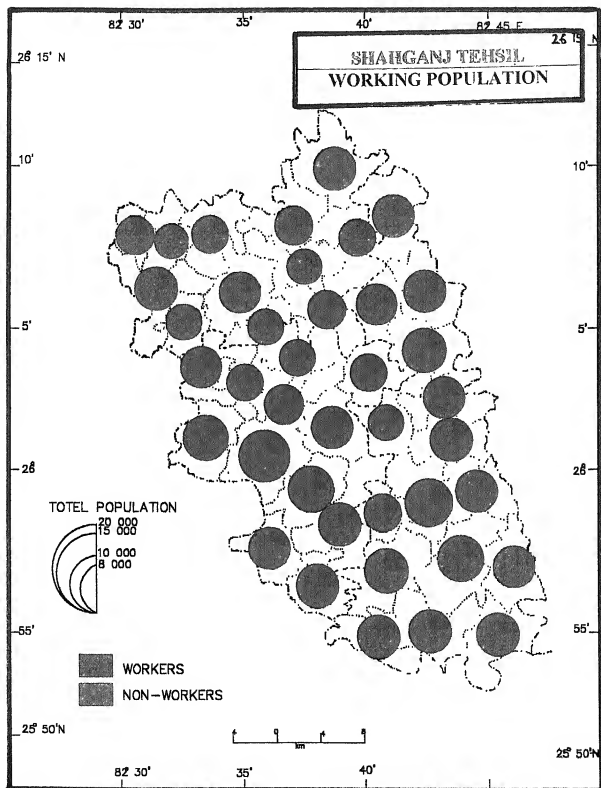
10 - 14
14 -18
18 -22
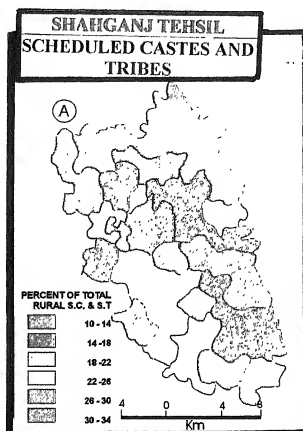22 -26
26 -30
30 - 34

Km

Figure 5.3

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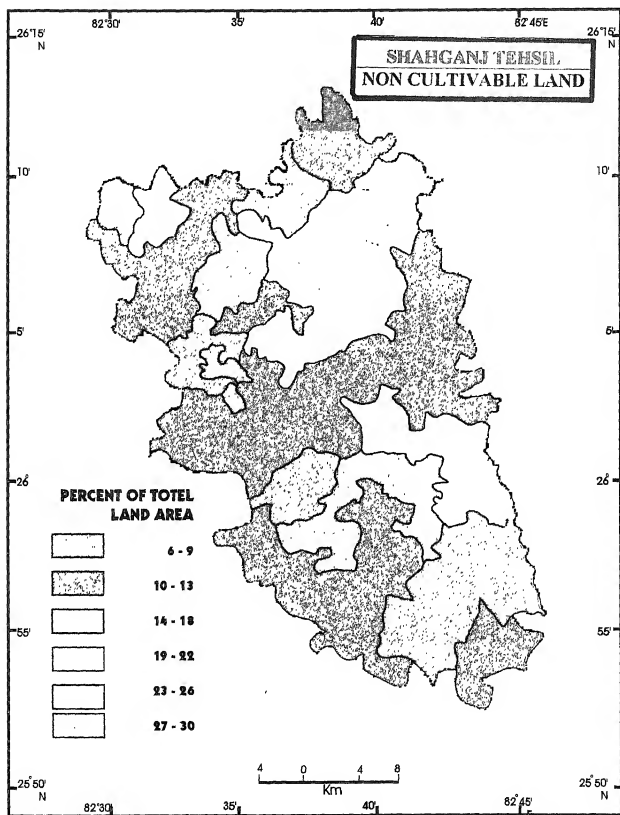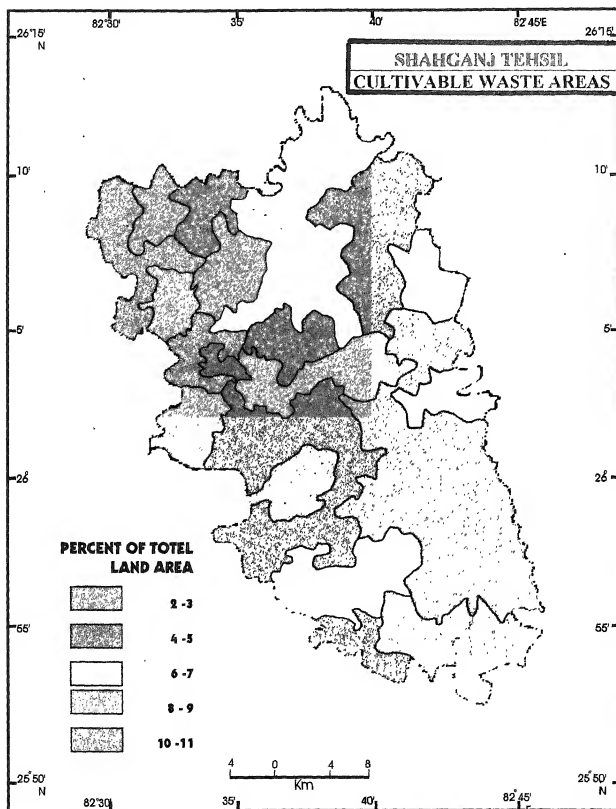
TABLE 5.2

WORKERS & NON-WORKERS POPULATION IN (%)

%OF MAIN WORKERS TO TOTAL POPULATION			%OF MARGINAL WORKERS TO TOT. POP.			% OF NON-WORKERS TO TOTAL POP..			% OF TOT. WORKERS TO TOTAL POP.		
TOT.	MALE	FEM	TOT.	MALE	FEM	TOT.	MALE	FEM	TOT.	MALE	FEM
25.59	46.03	5.18	3.25	1.15	5.35	71.16	52.82	89.47	28.84	47.18	10 53
25.63	46.08	5.28	3.35	1.19	5.49	71.02	52.73	89.23	29.98	47.27	10.77
24.25	44.62	1.36	0.13	0.04	0.29	75.62	55.34	98.41	24.38	44.66	1.59

SOURCE: District Statistical Bulletin, Jaunpur, 1991

INDUSTRIAL INFRASTURCTURE:

The rural sector is vast and scattered in terms of space. The development of infra-structural facilities for covering the isolated and secluded pockets or clusters of villages needs ample time and money (Sharma, D. & Desai, V.V., 1980). The employment of industries over such an unmonetized space depend on the provision of adequate infra-structural facilities like finance and banking, market system, transport and communication, storage facilities, institutional framework, skill and technology etc. Although the government adopted the institutional approach in 1960's to built up a sound and efficient infrastructure for all round development of a country, but even today the existing infra-structural facilities are far short of the requirements. However, the process is still going on to match the growing demands for infra-structural facilities. A brief mention of the existing infrastructure and communication mentioned below:

(i) BANKING FACILITIES:

There is a good network of financial and banking services in the study area, which may be utilized for meeting the financial and capital requirements of the industrial development. There are 3 district cooperative Banks, 8 Union Banks, 1 State Bank and 1 Central Bank and 4 Rural Banks in the study area (Fig 5.4).

The financial institutions and banks may be advised to advance soft term loans to the industrial entrepreneurs, who are willing to install their units in the area. In this way, these financial institutions can play a significant role in the promotion of industrial development in Shahganj Tehsil.

(ii) TRANSPORT AND COMMUNICATION:

Shahganj Tehsil has a large network of railways, roadways and communication lines. The tehsil has 151 km of railway lines with 2 railway stations and 565 km roads with 26 Bus Stations. State Highway number 5 and 34 pass through the area. While a number of district roads and P.W.D. roads connect the tehsil with important places like Varanasi, Allahabad and others. Besides, there are 22 Telegraphic offices, 34 Branch Post offices, 62 Public Call offices (PCO) and 246 Telephone connections too. These facilities considerably help not only the movement of goods and people but also help to communicate the important messages quickly inside and outside the area. In this way, the exhaustive network of transport and communication facilities proves quite helpful to the prosperous industrial

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SHAHGANJ TEHSIL.
BANKING FACILITIES

·U

·U

SUITHAKALAN
U   Co

·U

·BH
·SHAHGANJ
·Co ·U

·U

KHUTHAN

·Co

·U

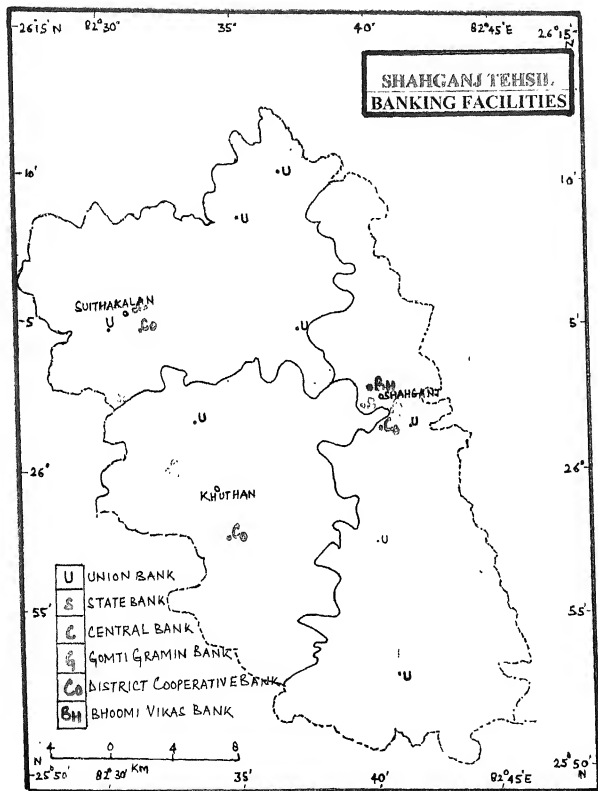| U | UNION BANK |
S	STATE BANK
C	CENTRAL BANK
G	GOMTI GRAMIN BANK
Co	DISTRICT COOPERATIVE BANK
BH	BHOOMI VIKAS BANK

·U

N
0   4   8
82°30' Km
25°50'

Figure 5.4

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development of Shahganj Tehsil. If utilized properly and in the right earnest, they can play a significant role in accelerating the process of industrial development in the study area.

(iii) INDUSTRIAL ESTATES AND AREAS:

To streamline and accelerate the process of industrial development only one industrial estate has been established so far, that too in Shahganj (Kauriya) development block. The process of industrialization in industrial areas has not yet started. This industrial estate, which is not being properly utilized at present, can play a major role in the industrial development of the tehsil (Fig. 5.5).

(iv) SKILL AND TRAINING:

The proper skill and training plays a very significant role in the industrial development of a region by improving the quality of labour. It improves the organization, management and functioning of industrial units on the one hand and improves the quality and quantity of industrial products on the other. The study area possesses a good number of village artisans, who have inherited traditional skills in their respective trades and can be fruitfully employed in various small-scale industries, in which their skill is utilized in most effective way. There are 223 Junior Basic Schools, 39 Senior Basic Schools for boys and 11 Senior Basic Schools for girls respectively. Side by side there are 22 Higher Secondary Schools for boys and girls and there is only one Degree College for higher education in Shahganj development block itself. These educational institutions can play a good role in improving the industrial skill and training to the students by changing and modifying the courses. Later on, they will prove to be valuable assets in the process of industrial development, provided their structural and functional condition is improved and they are allowed to use their full potential.

ASSISTANCE AND INCENTIVES FOR INDUSTRIAL DEVELOPMENT:

The government is providing a variety of assistance and incentives through several agencies and institutions for the industrial development of Shahganj Tehsil. Although central offices of such institutions and agencies, which provide development assistance and incentives for industrial growth are located in the study area, but their officials and representatives function up to the block level. Hence, such facilities are easily accessible to the entrepreneurs of the area.

The main institutions and agencies which provide assistance for the development of industries in the areas are U.P. State Industrial Development Corporation, District Industry Centre, UP Financial corporation, UP State Handloom Corporation, UP Export Corporation, UP Textile Corporation, UP Electronics Corporation Limited, Directorate of Industries and UP Small Industries Corporation Limited etc.

For the rapid industrial development, some concessions and incentives are also provided to the industrial entrepreneurs in Shahganj Tehsil with a view to achieve the objective of accelerated industrial growth. These incentives include capital investment, subsidy, exemption from sales tax, financial assistance through the District Industries Centres, exemption of octroi duty, subsidy on generating sets etc. The plan wise expenditure on various rural and small scale industrial units have undoubtedly given a boost to the industrial temper in the study area; but the performance doesn't measure up to the desired extent.
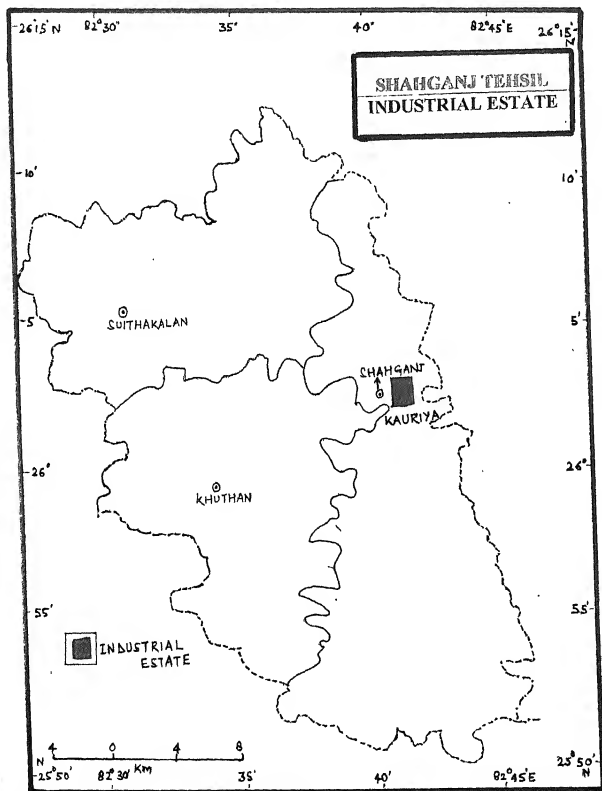
SHAHGANJ TEHSIL
INDUSTRIAL ESTATE

Figure 5.5

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Khadi and village industries board also provides concessional financial assistance to the industrial cooperative and rural industries established under its supervision. A block-wise distribution of loans to small-scale industrial units sanctioned under the Khadi Gramoudyog scheme in Shahganj Tehsil is shown below:

TABLE 5.3

LOANS TO UNITS UNDER KHADI GRAMUDYOG SCHEME 1999-2000

S.NO.	BLOCKS	LOANS IN RS.	INTEGRATED MARGIN MONEY LOAN IN (RS).
1.	SUITHAKALAN	1,69,025.00	13,770.00
2.	SHAHGANJ	9,512.50	8,890.0
3.	KHUTHAN	N.A.	12,600.00

SOURCE: "Industrial Marg Darshika" Bulletin District Industry Centre Jaunpur 1999-2000

The Board also helps such industrial units in marketing finished products. In this way, it is clear from the above factual description that various government institutions and agencies are providing a variety of assistance and incentives to the industrial units in the study area, but these facilities have not been fully utilized due to various constraints.

TYPES OF INDUSTRIES:

The tehsil has a long tradition of village and cottage industries. However, several industries various types have also come up in the tehsil in the post dependence period. A brief description of industries is as follows:

(i) VILLAGE AND COTTAGE INDUSTRIES:

The study area has been traditionally known for manufacturing various kinds of hair oils and perfumes. These products used to be the prized possession in the country in India and abroad in the pre-independence period. But in the post-independence period due to the growing emphasis on the organized industrial sector, these industries have been relegated to the background. But even today it employs 2-3 hundred persons with the modest investment, particularly in Shahganj Tehsil. The other traditional cottage industry in the study area used to be the manufacturing of paper from waste fabrics, flex and hemp. The handloom textile fabrics and woolen carpets making and other traditional cottage industries, which are still thriving, are comparatively most organized now. Hand-driven or power-driven looms owned particularly by the weavers in Shahganj area produce the handloom textiles. These handlooms products are consumed in the area and sent to the adjoining district as well. However, the woolen carpets are manufactured on handloom, but the product is exported to many foreign countries. The other types of cottage industries are found in the area, are gur and khandsari making, bidi making, cotton carpets, handloom cloth, Resha, pottery hand- pounding of paddy etc.

(ii) SMALL SCALE INDUSTRIAL UNITS:

Small-scale industrial units have very small investments and they work mainly for creating jobs for unemployed. The industrial development is at initial stage. There were no registered industrial units before 1961. At present there are 253 small-scale industrial units operating in different parts of the tehsil with the capital investment of

Rs. 225.00 lacs and employment generation for 1419 persons (Fig. 5.6). Although, there are about 23 different types of small scale industries with total units of 253, but the major types are textile and carpets, food products, metal products, wood products, machine tools etc. only some of the food product units are based on local resources and the rest use imported raw materials. The block-wise distribution of types and number of small-scale industrial units is shown in the given table.

TABLE 5.4

BLOCKWISE DISPERSAL OF SSI UNITS IN SHAHGANJ TEHSIL U.P. 1999-2000

S.N.	BLOCKS	SSI	UNIT	CAPITAL INVESTMENT	PRODUCTION	EMPLOY-MENT GENERATION
		TYPES	NO'S	(RS. LACS)	(RS. LACS)	PERSONS
1.	SUITHAKALAN	4	30	44.08	37.50	232
2.	SHAHGANJ	16	195	176.00	259.53	992
3.	KHUTHAN	3	28	4.02	29.13	195

SOURCE: "District Industrial Bulletin" Jaunpur 1999-2000

However, the value of industrial products rolled out by these units is miserably small i.e. Rs. 426.16 lacs. This is because of the fact that most of the industrial units are registered with the District Industry Center only on paper and actually, they are not operating in the field. Among such units are mostly textile and woolen carpet unit, food products, metal products units etc. Even those, which are functional, are also not working in full capacity due to several technical, financial and managerial bottlenecks.

(iii) MEDIUM SCALE INDUSTRIES:

Shahganj Tehsil possesses only one Medium Scale Industry i.e. U.P. Sugar Corporation Limited. With the total capital investment of Rs 8.33 crores and generating total employment for 590 persons with 1016 T.C.C. production capacity This industry is totally based on local resources i.e. capable of utilizing the available agricultural and manpower resources and generating the participatory self- sustaining industrial development.

SPATIAL DISTRIBUTION OF INDUSTRIAL UNITS:

The spatial distribution of industrial units displays a clustered pattern around the service centres. The higher concentration is found in Shahganj block followed by Suithakalan and Khuthan.

As regards the distribution, number and types of small-scale industrial units Shahganj block occupies the top position. The remaining development blocks have the lowest position in terms of number and types of S.S.I. Spatial pattern of capital investment, employment and production also shows a similar pattern (Table 5.4).

The other significant aspect of the spatial distribution of industrial units is that they are located mainly along major transport routes in the study area. The area and places, where the industrial units are located are adequately linked by roads and railways with other important places and can be easily approached. Besides, this area is connected sufficiently with their surrounding regions as well as with important
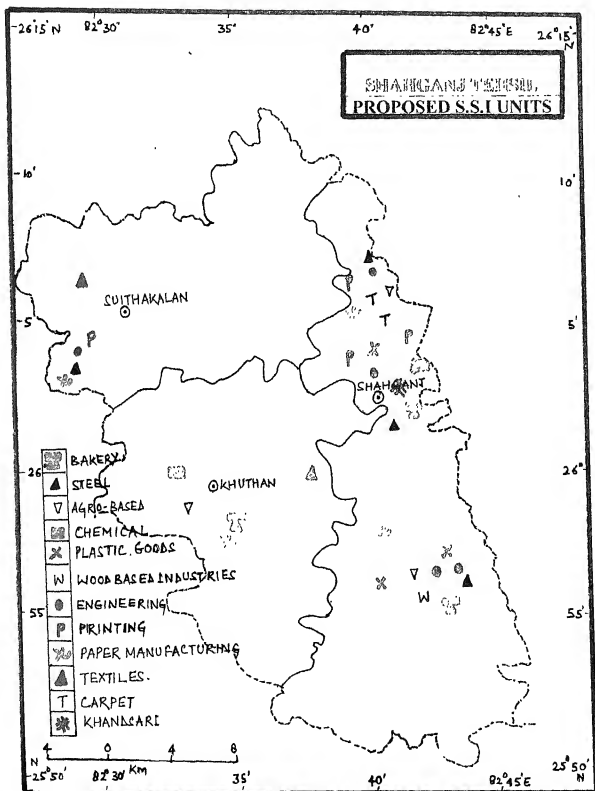
SHAHGANJ TEHSIL,
PROPOSED S.S.I UNITS

Figure 5.6

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cities like Allahabad, Varanasi etc. which contribute a lot in importing the raw materials in to the area and exporting the industrial goods outside the area. The three most important commodities imported from the study area are cotton, cloth and kerosene whereas, three most important commodities, which are exported, are gur, chillies and sugar. In addition, the high degree of accessibility and connectivity also promote efficient spatial interaction with industrial centres for a variety of socio-economic purposes.

PROBLEMS OF INDUSTRIES:

Shahganj possesses a variety of resources, which can be used and utilized to promote the development of manufacturing sector in the area. But in spite of a lot of efforts made during the last two decades, the progress of the industrial development has not been satisfactory and not up to the mark. The main problems facing the industrial development are as follows:

(i) CONVENTIONAL OUTLOOK:

Shahganj tehsil represents a class- ridden, tradition-bound and conventional human society, which in spite of a variety of scientific and technological development still believes in superstitious traditions. There is a lot of skepticism and fear among the rural people about leaving their traditional subsistence farming and venturing out into the industrial sector. Even the educated rural youth prefer a very modest employment in the public or private sector instead of opting for establishing his or her own small industrial units. This obscurantism and the lack of progressive and entrepreneurial aptitude among rural people has been a major impediment in promoting and developing industries in the rural sector (Mishra, B.N., 1989). The doubts and the lack of enterprise can be removed by educating the people about the merits of rural industries through demonstration and also by organizing seminars and meetings.

(ii) SCARCITY OF RAW MATERIAL:

Most of the rural resources like pulses, oilseed, cotton, sugarcane, hemp etc. and other raw materials like minerals, chemicals, yarn, paper, plastic materials etc. are used by a variety of small scale and heavy industries resulting into a tough competition for raw materials. Most of the industrial units of the study area are suffering from short supply of raw materials, hence, their functioning is intermittent and most of them are sick or closed.

(iii) SCARCITY OF CAPITAL:

Shahganj is one of the developing tehsils of U.P, where the agricultural productivity and per capita income is low, the rate of small saving is very low and the phenomena of capital formation is hardly known to people. Thus, the lack of finance is another problem, which the industrialization is confronted with. Moreover, most of the nationalized and commercial banks have developed apathetic attitude towards advancing loans to the rural industrial sector, as they are highly skeptical about the repayment of the loan amount. In spite of the great pressure from the government their performance on this count is not very encouraging because of already over dues on several units.

(iv) LACK OF INFRASTRUCTURE:

The rural industrialization demands adequate and sound infra-structural facilities like power supply, financial support, consultancy service, storage,

transportation, communication etc. Although, Shahganj tehsil is adequately internally connected by roads and also has good connections with far-off places by road as well as by rails, but the facilities for storage, finance, consultancy etc. are very inadequate in the study area. Only Shahganj have storage facilities. Added to this is the problem of interrupted power supply, which also weakens the prospects of industries in the area. The adequate provision of storage, finance and consultancy as well as power supply has to be made on the priority basis.

(v) TECHNOLOGICAL GAP:

At present almost the entire rural industrial sector in the study area is characterized by old and low-grade technology and the storage of skilled and trained supervisory personnel. It is a common experience that rural industries suffer from paucity of financial resources, which prevent them from adopting new innovative and production-oriented- technology.

(vi) HIGH COST OF PRODUCTION:

Due to above problems, the cost of products being rolled out by the rural industries in the area has considerably increased leading to a very tough competition with the products of organized industrial sector. This narrows down the demand for these goods.

As the rural industrial units are financially not such sound as to retain their products for long, they are compelled to dispose off their stocks on low prices, which ultimately tells upon their functioning and soon they are closed. Most of the operational industrial units in the area are facing these problems.

SPATIAL PLANNING FOR INDUSTRIAL DEVELOPMENT:

In view of the existing network of industrial units, the problems facing them and the potential for industrial development of Shahganj Tehsil, a spatial plan has been worked out for the study area, which indicated the most viable and appropriate location for various kinds of industries viz. medium and small scale industries. The identification of proposed industrial units and the appropriate location for them has been thoroughly carried out in the light of the following factors:
(i) The availability of the local industrial resources.
(ii) The availability of industrial raw materials in site.
(iii) The accessibility to the centres of raw materials, power resources and industrial markets.
(iv) The needs and requirements of the area.
(v) The viability of service centres and their surrounding regions.

TABLE 5.5

"PROPOSED INDUSTRIES IN SHAHGANJ TEHSIL"

S.NO.	TYPES OF INDUSTRIES
1.	TEXTILE GOODS
2.	PAPER MILLS & PAPER PRODUCTS
3.	ALCOHOL AND CHEMICAL PRODUCTS
4.	CARDBOARD
5.	CARPETS, COTTON & WOOLEN
6.	PRINTING PRESS & STATIONARY PRODUCT

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7.	BAKERY
8.	AGRO – BASED INDUSTRIES
9.	POPCORN & ICE - CANDY
10.	READYMADE GARMENTS
11.	FOOD PRODUCTS

On the basis of above factors, the following 11 of industries have been proposed in the Shahganj Tehsil as shown in the table (Table 5.5) and illustrated by figure (Fig. 5.7). Appropriate location for various kinds of industrial units have been shown in the following table (Table 5.6):

TABLE 5.6

"PROPOSED INDUSTRIAL UNITS IN VARIOUS ORDERS OF SERVICE CENTRES IN SHAHGANJ TEHSIL"

NAME OF SERVICE CENTRE	LARGE SCALE INDUSTRIAL UNIT	MEDIUM SCALE INDUSTRIAL UNITS	SMALL SCALE INDUSTRIAL UNITS
1ST ORDER SHAHGANJ	Paper Mills and Textile	Alcohol industries, Cardboard, Paper Mills & Chemical Industries	Woolen & Cotton Carpets, Stationary Items, Printing Press, Khandsari & Oil Industries
2ND ORDER KHUTHAN, KHETASARAI, SAMODHPUR AND RUDHAULI	NIL	Paper Mills and Cardboard	Stationary Items, Khandsari & Oil Mills, Bakery, Readymade Garments
3RD ORDER GAIRWAH, AARSIYA BAZAR, MIHRAWAN, PATTI NARENDRAPUR ETC.	NIL	NIL	Potato Chips and other food products, Popcorn & Ice-Candy, Bakery etc.

The spatial pattern of industrial network has been portrayed on the figure (Fig 5.6). From a close perusal of the above table, it is evident that heavy industries are proposed to be located around the Shahganj tehsil. This is the only centre in the study area, which possess high rate in terms of the above-mentioned factors for the location of heavy industry.

The medium scale industries have also been proposed in the second order service centres i.e. in Rudhauli and Suithakalan itself. The remaining one center has been rated low in terms of the above-mentioned factors. Hence, they are suitable for the location of only small-scale units. If this spatial plan for the industrial development is given a concrete shape, the resultant spatial pattern of industries will be as shown in (Fig. 5.6)
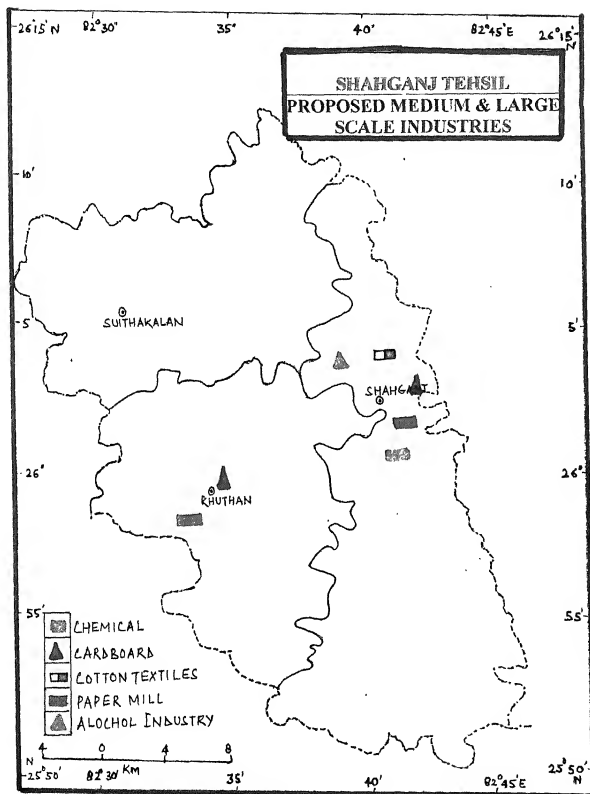
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Figure 5.7

POLICY SUGGESTIONS:
(i) NEW INDUSTRIAL UNITS:
The following policy measures are being suggested for giving a concrete spatial shape to industrial plan for Shahganj Tehsil:

(i) The accurate assessment of the size and magnitude of various kinds of resources available in the various parts of the study area should be carefully made to ensure the smooth supply of raw materials and the proper functioning of industrial units.

(ii) A careful assessment of the available resources produced as by-products by the existing industrial units in the study area will also go along way in determining the appropriate location and the future prospects of the industrial units.

(iii) A sufficient and proper appraisal of the available industrial infrastructure should also be made to ensure smooth functioning of the industrial units. The inadequacy on this count should be removed fairly before giving the concrete shape to the location of industries.

(iv) The adequate facility for financial assistance, technical guidance and supporting incentives should be made available to the entrepreneurs at least at the tehsil headquarters. This will help remove the procedural bottlenecks and the operational constraints, which quite often, hinder the functioning of industrial units.

(v) The proper assessment and evaluation of the magnitude and the skill of the available man-power should also be made in order to pave the way for greater participation by the local populace in the industrial development process.

(vi) An accurate assessment and analysis of the process of interaction that the proposed industrial units, are likely to generate between the industries and the surrounding population, will also serve as an efficient instrument in promoting the cause of participatory rural industrialization in Shahganj Tehsil.

(ii) SICK INDUSTRIAL UNITS:
The following policy suggestions will work as guidelines for renovating the poor industrial units:

(i) The sufficient financial resources are made available to these industrial units on soft and liberal terms directly from the banks without subjecting the entrepreneurs to unnecessary procedural hardships. This will solve the financial problems of these industrial units and will also make them directly responsible for the financial burden, which they take on themselves.

(ii) The regular and uninterrupted supply of the required raw material is ensured by the concerned government agencies and the department so, that the functioning and production of these industrial units is not stopped.

(iii) The regular technical help and advice to such industrial units is another necessary requirements, which must be timely ensured by concerned government department and agencies.

(iv) The functional organisation and managerial problems facing such industrial units must be carefully looked in to by the concerned official from time to time.

(v) The government agencies and departments should shoulder the responsibility of marketing the products of industrial units on rate-contract basis. This will regulate the functioning of small units on the one hand and will increase the earnings of the units as well as of the concerned agencies on the other.

(vi) If and wherever necessary, the expansion and modernization of these small scale industrial units should also be made in order to increase the functional efficiency and production capacity of these units.

If the above mentioned suggestions are taken in right spirit and are honestly implemented, the sick industrial units may be revived and renovated, their efficiency and functioning may be improved and they may be made to contribute to the general process of socio-economic development in the study area.

CONCLUSION:

From the above rational discussion, it is clear that Shahganj Tehsil possesses good potentials for the development and growth of industries. The industrial resources found in the study area may considerably help to accelerate the process of industrialization in the area. At present, the area is industrially undeveloped. There are 253 small-scale industrial units, but most of them are seized with a variety of financial, functional, organizational and technical problems, which hinders the process of industrial growth. Unless these problems are taken care of and solved within stipulated time, the industrial development in the study area will be simply a short comic play.

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CHAPTER SIX

SPATIAL PLANNING FOR DEVELOPMENT OF SOCIAL FACILITIES

INTRODUCTION:

The provision of adequate social facilities for the over all development of an organized and disciplined human societies marks the prime concern of a government, planners, and politicians. The magnitude and quality of the social facilities is not only indicative of the level of socio-economic development of human society, but it also contributes a lot to shaping its future forms and activities (Mishra B.N., 19879). Therefore, the study of the spatial patterns of social facilities in a region constitutes a significant part of academic as well as applied research. $2/3^{rd}$ of the world population is living only on $1/6^{th}$ income of the world and shares only $1/3^{rd}$ of its food production. Such a situation is politically unstable, untenable and psychologically unsound.

In spite of all the efforts made to improve the living standard two-third of the world population are still beyond the reach of even the most minimal health, nutrition, education and social services. The greatest sufferers are the 80 percent people living in rural areas, slums and the shantytowns and the nomads. It is worth enumerating some of the characteristics of under developed rural areas. These are 'eco-stagnation', cultural patterns that are unfavourable to development, agricultural unemployment and lack of alternative employment opportunities, poor facility of life, because of the scarcity of essential goods, facilities and money isolation caused by distance and poor communications and unfavourable environment predisposing to communicable diseases, malnutrition, inadequate health facilities, and lack of sanitation, poor education opportunities, social injustice including inequitable land tenure system and rigid hierarchy and class structure, inadequate representation and influence in national decision making.

Development is indigenous to each society and builds primarily on a country's own resources mainly land and people. Each country must develop its own model to social fulfillment. This will enlarge the capacity of individuals and communities to create and innovate. The mobilization of the energies and resources of the people, especially the rural poor, themselves emerges as the key factor in increasing their production and self-reliance. Such mobilization assumes the formation, adaptation and strengthening of community structure.

According to 'Dr. Mannel Carballo', "Rural Communities lover have tended to share a common predicament, namely that relative to Urban areas, they have been underserved and in many respect have experienced a quality of life and health inferior to that found in large towns and cities"(Mishra H.N., 1975).

In India, too, the provision of adequate facilities for the people has been expected as an important goal in the constitution .The "Minimum Need Programme" as enunciated in the approach paper to the Fifth Plan (1974-79) spells out what is meant by adequate social facilities and the norms which have to be followed for implementing the programmes (Approach Paper 5th Plan, 1974-79). The following items have been included in the "Minimum Need Programme" by the Planning Commission:

(i) Elementary education
(ii) Health facilities
(iii) Drinking water
(iv) Rural roads
(v) Rural Electrification
(vi) Housing for Land Less Labourers
(vii) Employment

However, an attempt will be made to make a detailed study of only three social facilities viz. Education, Health and Housing in this chapter. There are 2 ways of looking at the above-mentioned social facilities. The guiding principles in the Constitution and the Minimum Need Programme of Planning Commission view them as a response to the

basic rights of the citizens of a free country. Seeing this way, the provision of Health, Education and Housing facilities becomes an end in itself. It may not necessarily be linked to other productive activities, as it is a basic right of the individual citizen and it has got to be provided. No civilized country will do otherwise although in a developing situation, where resources are limited, expenditure on health, education and housing are related to productive activities. As such they may be considered unproductive and will get a low priority. This point of view is understandable as social facilities in India have rarely been seen within the framework of a comprehensive plan geared to the over all improvement of the economy (Sen, L.K).

Gandhiji's vision of rural development is relevant not only in the present day context, but also for all times to come. It is true to say that India lives in its villages as merely 70 percent of the population live in rural areas. "Sustainable Rural Development".... therefore, assumes prominence in the overall development of the area. Technology plays a crucial role. The technology capacity building and application could be undertaken in the following broad areas. (a) Agriculture and allied areas (b) Rural identification and entrepreneurship (c) Energy, transport and communication (d) Social sectors-health and nutrition, sanitation, environment, drinking water and housing (NIRD, Hyderabad, 1998).

Productive use of social facilities, which will serve the needs of poorer section as well as of the economy, can be made in two ways. The short-term use will be to provide these facilities in decentralized locations especially service centres, where many new programmes have to be implemented. From a long-term point of view health, education and housing facilities cannot but be productive. A major assumption of this production has been the adoption of improved agricultural practices by the farmers without a concomitant rise in the educational level. This assumption is only partially valid (Sen, L.K). Viewed in this perspective, the study of the spatial pattern of education, housing and health facilities in Shahganj Tehsil acquires an added importance and is likely to yield significant facts for planning and development purposes.

SECTION A:
EDUCATIONAL FACILITIES:

It is difficult to visualize the educational pattern of the ancient period particularly of this region in view of the paucity of evidence. However, the association of the Sage Ramadas with the village Jamaitha about half-way between Jaunpur and Jafarabad (Nevill, H.R., 1908), might suggested that in this region sages like used to attract a large number of pupils to their 'Ashrams' for acquiring higher education. Moreover, this region comprising the district of Jaunpur, also formed part of the Kosala Kingdom, which was a noted seat of learning (Mookerjee, R.K.). Later on, the district came to form part, at one time or an other, of the renowned empires like those of the Maurya, Kushanas, Guptas, Gahadavalas etc. and it can be suggested that the rulers of these dynasties encouraged the education and learning in this region. There are many evidences (Altekar A.S.& Rawat L.) to this fact that right from the ancient times via medieval to modern times Jaunpur district has all along been a known region for education and learning. However, the discussion on the present pattern of the education in the Shahganj tehsil particularly in the light of increased population is likely to bring out significant facts as shown in the table below.

TABLE 6.1

LITERACY IN SHAHGANJ TEHSIL-1991 (in %)

REGION	TOTAL		
	PERSONS	MALE	FEMALE
1.SHAHGANJ TEHSIL	24.18	38.16	10.13
RURAL	23.76	37.80	9.79
URBAN	38 74	50.04	26 03
2 JAUNPUR DISTRICT	32.99	48.26	17.63
3 UTTAR PRADESH	41.71	55.35	26 02

SOURCE: Statistical Bulletin, District Jaunpur -1991

LITERACY:
    The percentage of literacy in Shahganj is generally low as compared to that of Jaunpur District and entire U.P. as shown in the above table. However, the temporal growth of literacy has been considerably increasing by the commencement of the various literacy programmers of the government, but it is still not satisfactory. As regards the spatial pattern of literacy, the Shahganj block occupies the third position, with the literacy value of 37.0 percent. The Khuthan block with the literacy value of 39.2 percent occupies the top position. The remaining development block of Suithakala occupies the second position with the literacy value of 38.2 percent. All blocks have recorded a slight increase in the growth of literacy from 1971 to 1991.

TABLE 6.2

BLOCKWISE ABSTRACT OF LITERACY IN SHAHGANJ TEHSIL (1991)

S.NO.	REGION	TOTAL		
		PERSONS	MALE	FEMALE
1.	SUITHAKALAN	38.20	55 30	20 73
2	SHAHGANJ	37.00	52.00	21.10
3	KHUTHAN	39.20	57.80	20.90

SOURCE: Statistical Bulletin, District Jaunpur -1991

    However, the literacy in the rural areas and in case of females is much below their counterparts in the study area as mentioned in the above table (Table 6.2) and illustrated by figure (Fig. 6.1).
    The growth in the percentage of literacy has been made possible by a variety of development programmes launched by the government for the promotion of education and learning and the resultant increase in the educational facilities and number of teachers in the study area. The number of students has also fairly increased over the years in spite of the fact that most of the meritorious students of the region either go to the Allahabad or to Varanasi, which have been known seats of learning in Uttar Pradesh as well as in India.

TYPES AND DISTRIBUTION:
    There are about four types of educational facilities available in Shahganj Tehsil. These are Primary education, Middle Education, Secondary Education and Higher Secondary Education. In addition, various government sponsored programmes of

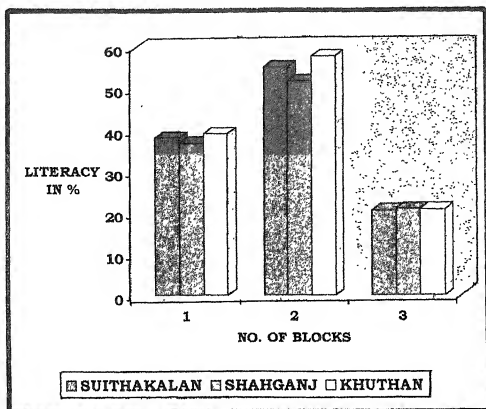# BLOCKWISE ABSTRACT OF LITERACY
IN SHAHAGNJ TEHSIL.

Figure 6.1

informal and adult education and education for women are also running. The number and distribution of these facilities is illustrated in Table 6.3.

The number and the general spatial pattern of the educational institutions, teachers and students as shown in the table (Table 6.3) exhibits that Shahganj Development block occupies the top position in terms of the number of educational institutions followed by Khuthan and Suithakalan. As regards the number of teachers, the top position is again occupied by Shahganj block followed by Khuthan and Suithakalan. Similarly, in terms of students the first place again occupied by Shahganj and followed by Khuthan and Suithakalan. However, the one urban area accounts for the highest share in all the three items.

(A) PRIMARY EDUCATION:

The number of institutions, teachers, and students present more or less, an even spatial pattern in the tehsil. In terms of the number of primary schools, teachers and students Shahganj occupies the top position followed by Khuthan and Suithakalan.

TABLE 6.3

BLOCKWISE DISTRIBUTION OF PRIMARY EDUCATION FACILITIES AND THE LOCAL NORMS

S.N.	BLOCKS	NO. OF UNITS	NO. OF TEACHERS NORMS		NO. OF STUDENT NORMS		TEACHER – STUDENT RATIO
			NOS	UNIT	NOS	UNIT	RATIO – 1
1.	SUITHAKALAN	58	217	3.7	9016	155.4	41.5
2.	SHAHGANJ	75	303	4.0	13010	173.4	42.9
3.	KHUTHAN	67	345	5.1	11331	169.1	32.8
	TOTAL	200	865	4.2	33357	165.9	1 : 39.6

SOURCE: Statistical Bulletin; District Jaunpur ,2000

However, the teacher student ratio varies from the lowest 1:32.8 in Khuthan block to the highest 1:42.9 in Shahganj block (Table 6.3).

The tehsil averages of primary schools, teachers and students have been taken as local standards or norms for identifying the state of primary education in general and the problem areas in particular as mentioned in the above table. Khuthan and Shahganj blocks have fairly comfortable position, while Suithakalan represent the actual problem area, where the planning for the promotion of Primary Education has to be formulated and implemented in the right spirit (Fig. 6.2).

(B) MIDDLE EDUCATION:

In middle education too, the number of institutions, teachers and students present more or less, a uniform spatial pattern in the study area. In terms of the number of middle schools and teachers Suithakalan block takes the first place, while in the number of students Shahganj block occupies the top position. The teacher-student ratio varies from the lowest i.e 1.62 in Suithakalan to highest 1:78 (Table 6.4)

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SHAHGANJ TEHSIL,
DISTRIBUTION OF
EDUCATIONAL FACILITIES

Figure 6.2

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TABLE 6.4

BLOCKWISE DISTRIBUTION OF MIDDLE EDUCATION FACILITIES AND THE LOCAL NORMS

S.N.	BLOCKS	NO. OF UNITS	NO. OF TEACHERS NORMS		NO. OF STUDENT NORMS		TEACHER – STUDENT RATIO
			NOS	UNIT	NOS	UNIT	RATIO – 1
1.	SUITHAKALAN	19	78	4.1	4798	252.5	61.5
2.	SHAHGANJ	16	62	3.9	4806	300.3	77.5
3.	KHUTHAN	14	72	5.1	4571	326.5	63.4
	TOTAL	49	212	4.3	14175	293.1	1 : 67.4

SOURCE: Statistical Bulletin; District Jaunpur , 2000

in Shahganj block. The tehsil norms have been taken for identifying the state of middle education in general and the problem areas in particular. Shahganj block and Khuthan represents the actual problem areas, where the development of middle education has to be taken up at priority level (Fig. 6.2).

(C) SECONDARY EDUCATION:

The uniform pattern in the number of schools, teachers and students marks the feature of secondary education in the area. In terms of number of institutions, teachers

TABLE 6.5

BLOCKWISE DISTRIBUTION OF SECONDARY EDUCATION FACILITIES AND THE LOCAL NORMS

S.N.	BLOCKS	NO. OF UNITS	NO. OF TEACHERS NORMS		NO. OF STUDENT NORMS		TEACHER – STUDENT RATIO
			NO'S	UNIT	NO'S	UNIT	RATIO – 1
1.	SUITHAKALAN	3	85	28.3	1770	590.0	20.8
2	SHAHGANJ	9	219	24.3	4720	524.4	21.5
S 3.	KHUTHAN	7	175	25.0	4250	607.1	24.2
	TOTAL	19	479	25.8	10740	573.8	1 : 22.1

SOURCE: District Statistical Bulletin; Jaunpur, 2000.

and students, Shahganj block occupies the top position, while the lowest is occupied by Suithakalan block. However, the teacher-student ratio varies from the lowest 1:20.8 in Suithakalan block to the highest 1:24.2 in Khuthan block (Table 6.5).

(D) HIGHER EDUCATION:

The pattern of higher education exhibits a thoroughly skewed pattern in the study area. In terms of the number of institutions, teachers and students, Shahganj and Suithakalan occupy the highest position. The lowest position goes to Khuthan having no centre for higher education.
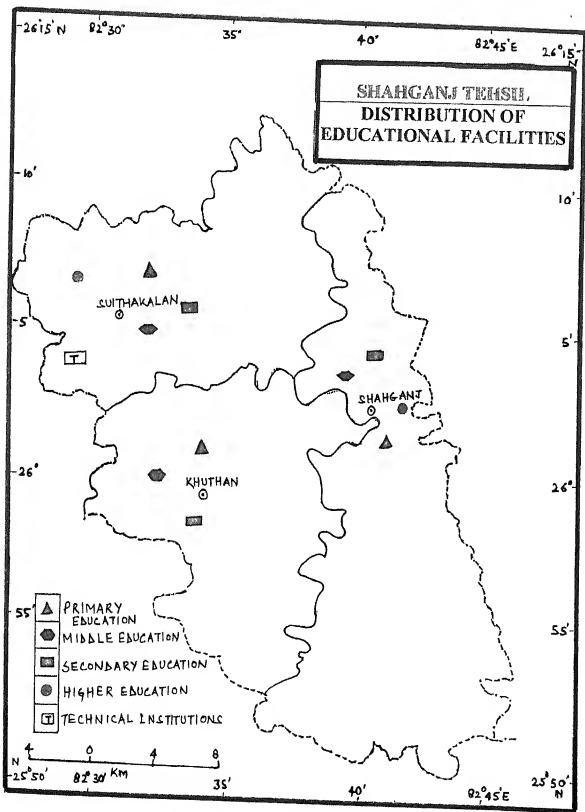
TABLE 6.6

BLOCKWISE DISTRIBUTION OF HIGHER EDUCATION FACILITIES AND THE LOCAL NORMS

S.N.	BLOCKS	NO. OF UNITS	NO. OF TEACHERS NORMS		NO. OF STUDENT NORMS		TEACHER-STUDENT RATIO
			NO'S	UNIT	NO'S	UNIT	RATIO - 1
1.	SUITHAKALAN	1	23	23.0	843	843.0	36 1
2.	SHAHGANJ	1	19	19 0	402	402.0	21.1
3.	KHUTHAN	0	0	0	0	0	0
	TOTAL	2	42	14.0	1245	415.0	1: 19.06

SOURCE: District Statistical Bulletin; Jaunpur, 2000

However the teacher-student ratio varies from the lowest 1:21 in the Shahganj block to the highest 1:36 in the Suithakalan, as Khuthan block is nil in this respect also (Table 6.6). So, in this way Khuthan block represents the problem area, which needs immediate assistance and incentives for the development of higher education to cater to the needs of the area (Fig.6.2).

(E) PROFESSIONAL & TECHNICAL EDUCATION:

The importance of technical and professional education in reducing the imbalance between agricultural and non-agricultural pursuits and accelerating the tempo of economic development is well known. Therefore, with the adoption of modern mechanized means of production the need for importing such education cannot be over emphasised(Gupta N.L.). There is only one technical education centre in Suithakalan block, which is sufficient for the entire region (Fig. 6.2).

(F) INFORMAL AND ADULT EDUCATION:

The scheme of informal education runs under the education department of the state and aims at providing literacy to such children and youths, who due to their poor social and financial conditions are not able to secure education at proper time of their lives. To cater to the needs of such people, the tehsil has only 2 registered centres located at Shahganj and Khuthan centres. Only these 2 centres are engaged in organizing and conducting courses on adult education in the study area. But the strange fact is that none of these agencies are honestly working to upgrade the level of literacy in the tehsil. Most of them are non-existent or disfunctional, but drawing aids from the government and misappropriating the funds.

MAJOR PROBLEMS OF EDUCATION:

In spite of large to medium network of educational facilities, the study area, suffers from some major problems and constraints mentioned below:
(i) Lack of educational facilities in several blocks, which are below the tehsil norms.
(ii) The poor condition and performance of existing educational institutions.
(iii) Lack of facilities for scientific, technical and professional education.
(iv) Lack of vocational education and training centres.
(v) Poor infrastructure facilities for various levels of education and various kinds of courses.

(vi) Poor teacher-taught ratio.
(vii) A very low level of education and literacy among scheduled castes and minorities.
(viii) Poor level of education and literacy among women.
(ix) Poor condition of informal and adult education.

SPATIAL PLAN FOR EDUCATIONAL FACILITIES:

A spatial plan for the development of educational facilities in Shahganj Tehsil has been drawn up in the light of the major problems and constrained enumerated above and the identified problem areas. The plan consists of the proposed locations for various types of educational facilities in various parts of the Tehsil and the relevant and effective recommendations for giving a concrete shape to the spatial plan.

TABLE 6.7
PROPOSED LOCATION FOR VARIOUS EDUCATIONAL FACILITIES

S.NO.	EDUCATIONAL FACILITIES	PROPOSED CENTRES
1.	PRIMARY EDUCATION	KHETASARAI
2	MIDDLE EDUCATION	ARSIYA
3.	SECONDARY EDUCATION	DIHIYAN
4.	PROFESSIONAL & TECHNICAL EDUCATION	RADHAULI

SOURCE: Compiled by the Author, 2000

The location of proposed educational facilities is illustrated on the figure (Fig 6.3) and the names of respective centres are given in the above table (Table 6.7). The centres recommended for the location of proposed educational facilities fall within the respective problem areas, which are below the tehsil norms and lack these facilities. Some effective and important policy suggestions are being made to overcome the educational problems and to give a concrete shape to the spatial plan:

(i) New Education Institutions of various levels should be opened up in the problem areas at the recommended centres as shown on the map (Fig. 6.3).

(ii) The existing educational institutions whose structural and functional conditions are poor should be strengthened to meet the educational requirements of the people.

(iii) The facilities for scientific, technical and professional education should be expanded commensurate with the respective demands in the study area.

(iv) The centres for vocational education and training should be started to enable the secondary level students and educated unemployed to get a gainful jobs or to start their own work.

(v) The adequate infrastructural facilities for various kinds of courses should be provided in the existing and the proposed educational institutions.

(vi) The number of students per teacher, almost at all levels is moderate. It should be brought to balance by creating more teaching posts in various education institutions.

(vii) The enrollment of the children of scheduled castes and minorities should be encouraged with a view to making them the productive assets in the process of socio-economic development of the area.

(viii) Sincere efforts should be made to encourage more women folk to undertake education in order to increase the literacy among them and to render them to become equal participants in the development process.

(ix) The schemes and programs of informal and adult education should be sincerely and honestly expanded and popularized with a view to upgrade the mental level of those who were deprived, so that they may contribute to the development process in the study area.
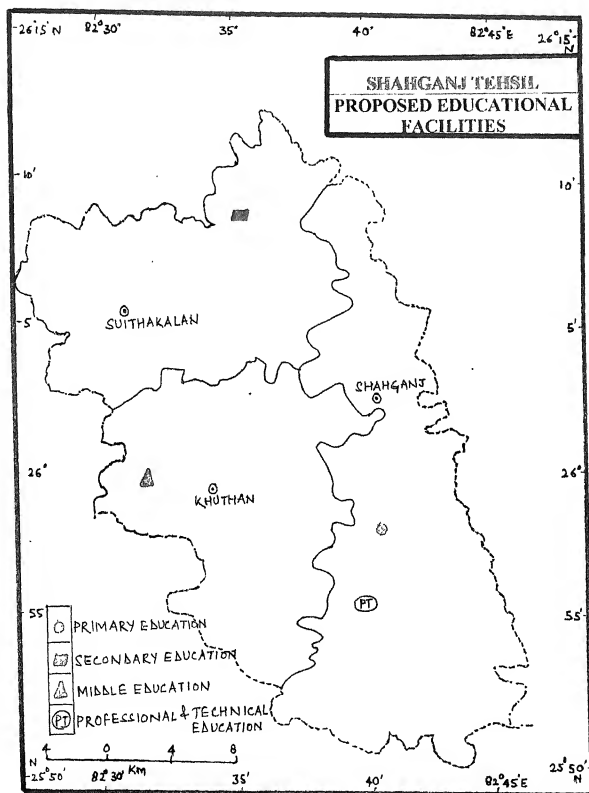
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Figure 6.3

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SECTION B:
HEALTH FACILITIES:

Health and human development form integral components of the socio-economic development of a nation or region. In the constitution the Public Health and Sanitation are incorporated in the State list (India : A Reference Annual, 1990). In India planned economic development since independence has been associated with an appreciable achievement in the field of health facilities. As a result, the expectation of life at birth has improved significantly, the death rate has shown a remarkable decline as a consequence of control and eradication of communicable diseases such as cholera, small pox, plague combined with reduction in the incidence of malaria and accompanied by the provision of safe drinking water and sanitation facilities (Economic Survey of India, 1990-91).

The work of providing health facilities was greatly accelerated after independence under the democratic set up,when the need of maintaining public health for productive purposes was realized. In Shahganj Tehsil too, rapid strides have been made in the expansion of medical and health services over the five-year plans. A number of hospital, clinics and dispensaries have been established in various parts of the study area.

DIET AND NUTRITION:

Science of human nutrition deals with relation of food to health and diseases. It aims at providing of optimum amounts of various nutrients required to attain or maintain a positive state of health of all groups of community. Good nutrition calls for balanced intake of all nutrients, especially proteins, vitamins and minerals. Caloric requirements are of basic importance. Problems of mal nutrition prevalent in most parts of the world in various forms have given a great impetus to the science of Nutrition (Rattan V., 1984).

In India the caloric requirements for groups are recorded in the table (Table 6.8). These caloric values for various groups are needed to maintain a normal physical health to handle daily works and to develop the required resistance to fight out the diseases.

TABLE 6.8
KCAL REQUIREMENT FOR CHILDREN AND ADULTS

S.NO.	AGE IN YEARS	APPROX. KCAL/DAY
1.	1 – 3	1000
2.	4 – 6	1300
3.	7 – 9	1600
4.	10 – 12	2000
5.	13 – 15	2400
6.	16 – 19	2800
7.	For Average Adult Male	2600
8.	For Adult Female	2100
9.	Pregnant Women	2600
10.	Manual Worker	4000
11.	Nursing Mother	3000

SOURCE: Handbook of Preventive Social Medicine, 2000

To fulfill the above mentioned caloric needs, the people should take balanced diet which contains all nutrients particularly proteins and vitamins. It should have 50-60 percent carbohydrate, 30-35 percent fats and 10-15 percent proteins with necessary vitamins and minerals. However, in India the Nutrition Advisory Committee has recommended the following combination of food items with their specific quantities to ensure the balance diet and the required calorie intake for a working adult.

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As compared to the recommended standard diet in India the pattern of general diet in the study area is very poor. However, the condition is slightly better in case of urban areas and upper class families,while it is worse in case of rural poor. The condition of females in terms of diet is also very poor. The survey shows that the consumption of various items by people in the tehsil is considerably below the norms. This has led to the condition of malnutrition, under nutrition, health hazards and diseases in the study area. In the event of natural calamities like floods and droughts, the health conditions become more depressing.

MAJOR DISEASES:

Owing to the poor unbalanced diet and low level of caloric intake, the general health in the area doesn't match the recommended standard. Most of the diseases to which the people fall prey every year are infact, deficiency diseases. The major diseases in the area are malaria, typhoid, influenza, cold and flue, cholera, measles, diaorrhea, cataract, anemia, goiter, beriberi, stomach diseases etc. However, the government agencies and departments are making all out efforts particularly after independence to control these diseases and to improve the general health by expanding the network of health facilities in the tehsil.

GROWTH OF HEALTH FACILITIES:

The number of health and medical facilities has increased over the years. The temporal growth is greater in case of allopathic dispensaries, doctors and beds as compared to homeopathic ones. This growth has been made possible by a variety of health development programmers launched by the government. The Union Ministry of health and family welfare plays a vital role in the national efforts to help the citizens lead a happy and healthy life. The Ministry is responsible for implementing programmes of national importance like family welfare, primary health care services, prevention and control of diseases etc. Despite this growth, the number of facilities available in the tehsil are still short of the requirement due -to the growing pressure of population, low caloric intake and poor sanitation and hygiene facilities. However, the provision and promotion of low-budget medical facilities like Ayurvedic and Homeopathic Medicines in rural areas will serve the cause of public health more effectively.

PATTERNS AND TYPES:

There are about 5 types of health and medical facilities available in the study area. They are health centres or midwife centres, additional primary centres, maternity and child-welfare centres, primary centres and community health centres. The number and distribution of these facilities is illustrated in the given table.

TABLE 6.9.

BLOCKWISE TOTAL NO. OF DISPENSARIES, BEDS AND DOCTORS IN SHAHGANJ

TEHSIL IN 1999-2000

S.NO.	BLOCKS	TOTAL NUMBER OF DISPENSARIES	TOTAL NUMBER OF BEDS	TOTAL NUMBER OF DOCTORS
1.	SUITHAKALAN	1	20	3
2.	SHAHGANJ	4	40	9
3.	KHUTHAN	2	20	5

SOURCE: District Statistical Bulletin : Jaunpur, 2000

The number and general spatial pattern of the dispensaries, beds and doctors as shown in the (6; 10) table shows that the total number of dispensaries ranges from 1 to 4 and the highest number is found in Shahganj followed by Khuthan and Suithakalan. As regards the number of beds Shahganj again occupies the top position having 40 beds whereas Khuthan and Suithakalan shares the second position having 20 beds each. Similarly, in terms of doctors the first place is shared by Shahganj block having 9 doctors followed by Khuthan block with 5 doctors and Suithakalan block with 3 doctors each.

TABLE 6.10

BLOCKWISE ALLOPATHIC HEALTH FACILITIES IN SHAHGANJ TEHSIL (1999-2000)

S.N	BLOCKS	DISPEN SARIES	PHC'S	MCWC	MCW_SUB CENTRE	BEDS	DOCTORS
1.	SUITHAKALAN	0	4	1	21	16	2
2.	SHAHGANJ	3	6	2	32	84	6
3.	KHUTHAN	0	4	1	22	16	2
	TOTAL	**3**	**14**	**4**	**75**	**116**	**10**

SOURCE: District Statistical Bulletin Jaunpur 2000

As regards the number of sub-centres, the top position goes to Shahganj block (32) followed by Khuthan block (22) and Suithakalan block (21). The Tehsil has a total of 75 sub-centres. The national norm for trained birth attendants is one per village, while that of the village health guide is one per 1000 population. The national norm for sub-centres is one per 5000 populations. There is no community health centre, in the study area. These centres possess a greater variety and number of medical facilities as compared to the primary health centres. The government norm for the establishment of a community health centre is one per 1,20,000 population (Table 6.11).

In view of the above norms laid down by the government, the existing medical facilities fall much short of the norms. Besides, most of the above-mentioned medical units are defunct doctors and the supporting staff mostly residing in Jaunpur city resulting into great problems for villagers. Thus, the poor serviceability of the existing network of medical facilities further adds insult to the injury. Due to these, the area is in dire need of the efficient medical services in different parts.

TABLE 6.11

CENTRAL NORMS OF HEALTH FACILITIES

S.NO.	FUNCTIOING SERVICE CENTRE	NORMS
1.	TRAINED BIRTH ATTENDANT (DAI)	ONE PER VILLAGE
2.	VILLAGE HEALTH GUIDE	ONE PER 1000 POPULATION
3.	SUB – CENTRE	ONE PER 5000 POPULATION
4.	PRIMARY HEALTH CENTRE	ONE PER 3000 POPULATION
5.	COMMUNITY CENTRE	ONE PER 1,20,000 POPULATION

SOURCE: District Statistical Bulletin Jaunpur, 2000

To provide adequate medical facilities and to improve health standard of the people (rural population), the government has established primary health centres (P.H.Cs)

in every development block. Each P.H.C. comprises an allopathic dispensary, a maternity and child welfare center, 3 to 5 maternity sub-centres and 5 family welfare centres and is managed by a medical officer who is fully responsible for the cases related to epidemic, flood, drought, health, education, environmental pollution, hazards and sanitation etc. A sanitary inspector, health advisor, small pox supervisor, vaccinator etc assist him. Besides, another medical officer exclusively for family welfare, maternity and child welfare and family planning is also deputed to assist in maintaining the public health in the area.

There is a total of 14 primary health centres in the tehsil. In terms of the numbers of primary health centre Shahganj with 6 centres occupies the top position followed by Khuthan and Suithakala having 4 each. The government norms for Primary Health centres are one per 30,000 populations. The tehsil has 4 additional primary health centres with Shahganj block having two centres and Suithakalan and Khuthan having 1 each

In Shahganj Tehsil, every primary health centre has a Maternity Child Welfare Center (M.C.W.C.). There are 4 main centres and 75 sub-centres. The general health of the women in the study area is weak due to the poor nutrition, low level of caloric intake, maximum load of household and outdoor works, burden of children's care, family tension etc. .The incidence of these factors is more alarming in rural areas and among low-income groups. Besides, the health of the women used to be seriously impaired in the past particularly during pregnancy and delivery, as trained nurses and midwifes were not available and the work was performed by untrained persons. As a result, the death rate of both mothers and infants were quite high. But since 1958, the government embarked upon a programme to establish several maternity and child welfare centre in the tehsil. Trained midwives and staff attend these centres at present. A health visitor heads the maternity centre, which is the controlling body. M.C.W.C. are attached with each and every primary health centre.

But these are only on paper. Practically most of these facilities are not functional due to the doctors and other staff residing in Jaunpur city, besides their apathy towards medical problems of rural area.

FAMILY WELFARE CENTRE:

Population explosion during last few years has been causing serious concern at all. If this rapid growth is allowed to go unchecked, it is bound to nullify all the developmental activities. With a view to arresting this abnormal growth, family welfare programmed being vigorously implemented all over the study area. Family planning centre are running in each block and mostly attached with P.H.Cs., but their working is far from satisfactory.

AYURVEDIC & HOMEOPATHIC HEALTH FACILITIES:

There are few ayurvedic health facilities available only in Khuthan block i.e.2 and the number of beds against 2 dispensaries is 4 and the number of doctors is also 2. Suithakalan block and Shahganj blocks are totally devoid of these facilities. However, the homeopathic and medical facilities are entirely absent in the study area. These facilities are quite cheaper but are not preferred by the public. Hence, their role in providing medical facilities in the area is only nominal. Besides, they also do not function regularly and people do not have knowledge about them.

MAJOR PROBLEMS OF HEALTH FACILITIES:

In spite of a network of health facilities, the study area suffers from some major health and medical problems and constraints, which are mentioned below:

(i) Large locational gaps in health facilities.

(ii) Poor structural and functional conditions of existing facilities like hospitals and dispensaries.

(iii) Inadequate number of doctors, nursing staff and attendants.

(iv) Lack of operation theatres, pathologies, x-rays and adequate nursing facilities.

(v) Lack of proper sanitation and hygiene facilities.

(vi) Lack of infrastructure facilities like building, wards, beds, apparatus, power and water supply etc.

(vii) Inadequacy and unavailability of proper medicines & drugs.

(viii) Lack of M.C.W.C. and family planning facilities.

(ix) No provision for the emergency cases like child delivery, accidents, burns, cholera etc.

(x) Lack of proper nutrition and diet particularly in rural areas.

(xi) Lack of ambulances to transfer the emergency cases to the District Civil Hospital.

(xii) Lack of sympathy, commitment and sincerity among medical staff.

(xiii) Lack of management, supervision and control by higher authorities.

(xiv) Lack of charitable medical facilities for poor, depressed and downtrodden mostly living in slum and rural areas.

SPATIAL PLAN FOR HEALTH FACILITIES:

A Spatial plan for the development of health facilities in the study area has been proposed in the light of the major problems and constraints enumerated above and the identified problem areas.

The plan consists of the proposed location of six types of health facilities in various parts of the study area and the relevant and effective recommendations for giving concrete shape to the spatial plan. The location for proposed health facilities is illustrated in the table (Table 6.12) and the names of the respective centres are also shown in the given table.

TABLE 6.12

HEALTH CENTRES IN SHAHGANJ TEHSIL 1999-2000

S.NO	COMMUNITY & PRIMARY HEALTH CENTRES	ADDITIONBAL HEALTH CENTRES
1.	SUITHAKALAN (P.H.C.)	SAMODHPUR, ARSIYA BAZAR, BHAISULI
2.	SHAHGANJ (P.H.C.)	SONDHI, MIHRAWAN, BEEBIGANJ, SONGAR, BHADRHA, TAKHA (WEST).
3.	KHUTHAN (P.H.C.)	GAIHRAWA, PATTI NARENDRAPUR, JAMUNIYA

SOURCE: CMO Office, District Jaunpur, 2000.

The centres recommended for the location of proposed health facilities fall within the respective problem areas and are according to the national norm of the health. Some important and effective suggestions are being made to overcome the health problems and to give a concrete shape to the spatial plan.

(i) New health and medical centres of various levels and types should be opened at the recommended service centers (Table 6.12)

(ii) Poor condition of existing facilities should be improved.

(iii) Proper number of doctors, nursing staff and attendants should be deployed.

(iv) New operation theaters, X-ray centres etc. should be opened in the problem areas.

(v) Adequate facilities for public health and hygiene are provided particularly in rural areas and slums.

(vi) Necessary medicines and drugs should always be kept in ample measures.

(vii) The M.C.W.C. and family planning facilities should be provided in sufficient measures.

(viii) There should be adequate and proper arrangement for admitting the emergency cases to the remote rural areas.

(ix) The concerned government agencies should encourage the people in rural areas to take balanced diet. They are required to encourage producing the food items on their own.

(x) Adequate facilities for conveyance should be made in order to make the medical facilities more accessible to the people.

(xi) Effective checks and measures should be followed for proper management and supervision by the higher authorities.

(xii) Charitable medical centres should be opened by the government and the voluntary agencies to help the deprived classes and people living in slum areas (Fig.6.4).

TABLE 6.13

PROPOSED LOCATION FOR VARIOUS HEALTH FACILITIES IN SHAHGANJ TEHSIL

S.NO	HEALTH FACILITIES	PROPOSED CENTRES
1.	SUB CENTERS/ MIDWIFE CENTRE	RUDHAULI
2.	ADDITIONAL PRIMARY HEALTH CENTRE	BARI RAJAPUR
3.	COMMUNITY HEALTH CENTRE	SHAHGANJ
4	M.C W C. & FAMILY PLANNING CENTRE	SAMODHPUR
5.	HOMEOPATHIC MEDICAL CENTRE	SUITHAKALAN, SHAHGANJ AND KHUTHAN

SOURCE : CMO Office, District Jaunpur, 2000

SECTION C:
HOUSING FACILITIES:

SETTELMENT:

The study of settlement is basic to human geography, because the form of settlement in any particular region reflects man's relationship with the environment. Settlements have gradually grown up and evolved over a long period of time and by studying the site, pattern and arrangement of settlements, we can see something of the history of man's exploitation of the surrounding land. Settlement reflects not only man's response to his environment, but also the religions and customs (social) of his society The settlements, where several different groups of people live together, may be divided into separate "quarters" each distinguished by particular building styles or house arrangement or by different religious or other communal buildings. In the rural areas, such structures include sheds for domestic animals, barns for storage of grains, work sheds for village artisans, etc. In urban areas, factories, markets, offices, railway stations etc are included. Settlements may be permanent structures built of brick or stone or
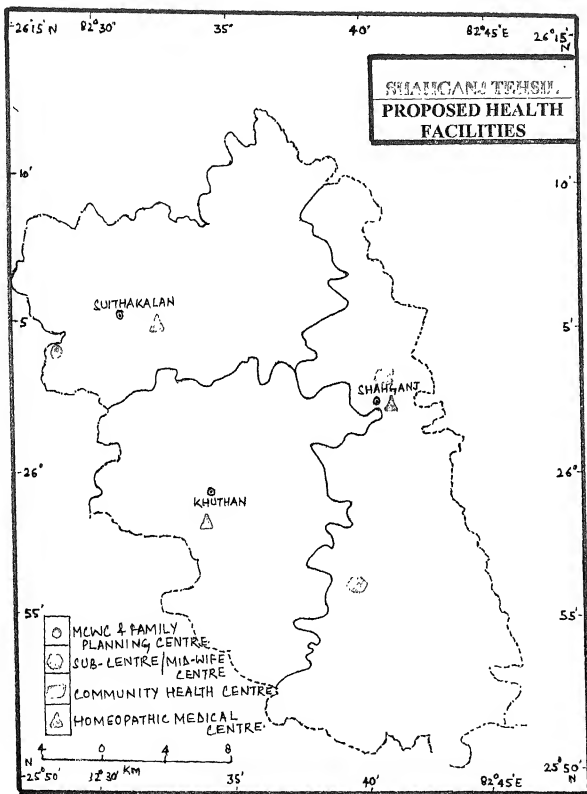
Legend:
- ○ MCWC & FAMILY PLANNING CENTRE
- ◔ SUB-CENTRE/MID-WIFE CENTRE
- ◻ COMMUNITY HEALTH CENTRE
- △ HOMEOPATHIC MEDICAL CENTRE

Locations: SUITHAKALAN, SHAHGANJ, KHUTHAN

Figure 6.4

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temporary ones like tents, huts etc. Thus, all kinds of structures built by humans are included in the term "Settlement". In the early period, most of the settlements were constructed out of locally available materials like clay, stones, slates, timber, thatch, animal skin etc. With spread of transportation facilities, materials like bricks, tiles and cement could be obtained from distant places.

Rural settlements develop distinct morphological features in the context of their life history. One of the primary interests of geographers is to trace the processes by which rural settlements originate and undergo changes. Singh (1957) traced the evolution of rural settlements in the middle ganga valley through various periods of Indian history and he examined the territorial basis of medieval town and village settlement in Eastern Uttar Pradesh. Some rural settlement function as central places for their surrounding areas.

In the early periods of human settlement, when man was a food-gatherer or hunter large areas were needed to support a family and dispersed houses were common. When shifting cultivation came to be adopted by clearing the forest, each clearing had one or two families only. While men were busy with hunting and fishing, women looked after the fields. Pastoral nomads also moved in small groups consisting of new families only. The beginnings of a village were the result of introduction of sedentary agriculture as in the river valleys.

Agriculture necessitated permanent settlement near the cultivated land. The large yields made it possible to support non-agricultural workers who served the community by their services. Social organization got evolved to measure the land owned by each peasant, arrange for distribution of water, collect taxes in the form of grains etc. Thus, all houses came to be clustered around a village in a common place or a temple or other places of worship. Such nucleated settlements also provide security from wild animals, dacoits etc. Nucleated rural settlements are more common in the study area (India : A Reference Annual, 1990).

Shahganj Tehsil possesses a high percentage of rural population. According to 1991 census about 93.11 percent population lives in 548 villages distributed in 3 development blocks. These villages are of different sizes and are scattered all over the area forming the compact to sprinkled pattern of settlements. The important geographical factors like fertile land, water and transport availability are the leading factors for the distribution of population in an area.

TYPES AND SETTLEMENTS:

Only two major types of settlements are common sights in the study area. They are: (i) Compact Settlements and (ii) Semi-Compact Settlements.

COMPACT/NUCLEATED:

Based on farming they comprise houses, farm structures, and other buildings such as religious centres, with fields for grazing animals and growing crops surrounding the village building, found in mostly highly productive alluvial plains. Houses are built in close vicinity to each other. The greater frequency of nucleated settlements is due to some factors, which attract them e.g. in arid and semi-arid regions, villages occur more commonly near sources of water supply like river, tanks, wells or springs. These sources of water attract the location of houses near them. They keep their animals also in part of their houses. Houses are closely spaced and streets are narrow. People are closely knit in a social bond. These settlements are found in all the blocks. Towns and market centres are compact settlements.

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SEMI-COMPACT SETTLEMENTS:

It is a transitional phase in the growth of settlement. Increase in population can cause village to grow and the number of houses increases. This type of settlement is small and loosely nucleated and in fact lacks a pattern. Increase in population starts occupying the open spaces and leads to semi-compact settlements, which ultimately acquires the shape of a nucleated or compact settlement. Streets are aligned in a rectangular pattern. Each street has houses belonging to different castes also. Such settlements are found mostly in areas of less fertile soils, userlands or on the dissected lands in all the blocks. Besides, some scattered settlements, although, very uncommon, are also seen in usarised and alkaline areas.

PATTERN OF SETTLEMENTS:

Due to the rectangular land holding pattern, most of the settlements exhibit square shaped or rectangular patterns in the study area. The linear pattern is found along rivers and roads, while the checkerboard pattern is seen in flat area and also along the roads. The star pattern is common sight near the crossroads. However, the rectangular and linear patterns dominate the area. Towns and market centres are the examples of rectangular and checkerboard pattern. However, the following five ecological factors control and influence the distribution pattern of settlements in the study area.

(i) Water is the most necessary element of human needs. Settlements were find near lakes, spring, rivers etc. where water could be easily obtained. In our study area, we find numerous lakes, ponds etc. where people used to live in numbers.

(ii) Suitable land for family, pasture, arable land and woodland. This is also an important cause of the settlement.

(iii) If water and land were available, the site chosen for the building of a village was usually one where the land was dry and not subject to flooding. This is an elementary precaution to prevent damage to houses and loss of life. The study area is having a clay soil, loam soil etc. that is useful in cultivation but does not yield much.

(iv) Availability of building materials either wood, or stones, mud-bricks etc. near the settlement. In Shahganj Tehsil we find tropical monsoon deciduous type of vegetation, which provide building material, but not much.

(v) Another important factor is health, people do not choose to settle in disease prone areas. The quality of health facilities is not satisfactory, as we have seen in this chapter too, there is lot more to develop.

So, these are the 5 most effective factors that influenced any settlement of a region.

HOUSE BUILDING MATERIALS AND HOUSE TYPES:

The study area-Shahganj Tehsil of Jaunpur District represents a typical rural area of middle ganga plain where clay, sand, willows, thatches, bamboo, deciduous woods etc. are found in abundance. Hence, most of the houses, particularly of depressed classes, are built with mud, bamboo, woods and thatches. The roofs are made of a tile, which is baked from clay by potters in the study area, or thatches made of tree leaves and willows. Houses made of bricks, concrete and cement thinly dot the rural areas and mostly belong to higher castes. Most of the towns, market centres and service centres are characterized by Pucca Houses made of bricks and cements.

Most of the thatched houses have two or three rooms with a small mud boundary forming a courtyard in front of the house. The Kuccha houses with tiled roof have mostly 2-4 rooms with a courtyard and a kitchen. The cattle shed is a thatched hut erected at a distance from the house. Most of the Pucca houses in rural areas are single storeyed

having 4-9 rooms with a kitchen and a courtyard. But in towns and market centres about 50-60 percent houses are double storeyed with 5-7 rooms at each storey.

MORPHOLOGY OF SETTLEMENTS:

The morphology of settlements refers to the physical and functional layout, the housing conditions, and sanitation and hygiene of the settlements. As regards the physical morphology, only 30-40 percent villages of the total 508 inhabited villages of the study area are within 3 kms of either Pucca or Kachha roads, hence they have better accessibility, while the rest of the villages have poor connectivity and are accessible only through Kachha pathways or cattle tracks. The internal morphology is unplanned and poor with narrow streets, lanes and by lanes separating the individual dwelling units with complete lack drainage lines or wasted disposal system. As a result during rainy season most of the villages are wholly or partly waterlogged leading to difficult mobility, mosquito breeding, water borne diseases etc. Due to absence of drainage lines and disposal system the domestic wastes, dirts, filth and dirty water all heaped and stagnate in the streets and lanes themselves resulting into bad stench leading to proliferation of germs, viruses and bacteria of various diseases. As the houses do not have toilet facilities, so people usally ease out at the outer margins of the settlements. This also degenerates and spoils the sanitary conditions of the settlements. In towns and market centres too the streets, roads, lanes and by lanes are not in good condition nor there is efficient waste disposal system. Hence, the hygienic condition of these centres is also bad and unsatisfactory.

As far as the functional morphology is concerned, the settlements do not have specialized functional areas. Rural settlements have purely agrarian functions carried out by individual units, while towns and market centres have agrarian as well as trade and commerce mixed randomly in different parts. So it is difficult to isolate them. Thus, functional morphology is just a name; practically it is very poor in the study area.

MAJOR PROBLEMS OF SETTLEMENTS:

In spite of large network of housing facilities, the study area suffer from some major problems and constraints which are mentioned below:
(i) Lack of water facility in several nayaya panchyats, which are below the norm.
(ii) Inadequate sanitation and hygiene in settlements.
(iii) Poor conditions of lanes and by-lanes, streets etc.
(iv) Lack of waste disposal facilities in settlements.
(v) Poor accessibility of settlements.
(vi) Lack of proper drainage.
(vii) Lack of finance – the most important factor.
(viii) Lack of adequate accommodation and ventilation.
(ix) Poor infrastructure facilities.

SPATIAL PLANNING FOR HOUSING FACILITIES:

A spatial plan for the proper development of housing facilities in Shahganj Tehsil has been drawn up in the light of the major problems and constraints enumerated above. Some important and effective policy suggestions are being made to overcome the problem of Housing and to give a concrete shape to the spatial plan:
(i) Availability of water facility is must in the problem areas, it should be adequately provided.
(ii) The connectivity and accessibility of settlements should be improved by constructing new roads.

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(iii) The condition of roads, streets, lanes etc, should be improved by laying bricks.

(iv) Adequate facilities for drainage should be provided by constructing drains to get rid of water logging, diseases etc.

(v) An efficient disposal system should be developed to dispose off the domestic wastes and effluents.

(vi) Proper arrangement for sanitation and hygiene should be made to check health hazards.

(vii) People should be advised to make adequate provision for ventilation, sanitation and hygiene in their houses.

(viii) Infrastructural facilities like water supply, power supply, public utilities etc should be provided in settlements.

(ix) Adequate finance in form of loans and subsidies should be made available to the people by the government agencies and banks on softterms to construct houses with ample amenities and facilities.

(x) The financal, technical and material services for house construction should be established at various service centres so that people may easily avail of these facilities.

(xi) The physical and functional morphology of service centres should also be improved to meet the housing requirements of the surrounding rural areas.

CONCLUSION:

The rural areas are faced with a variety of educational medical and housing problems, which have been discussed at length in the forgoing pages. However, they are not beyond control and can be solved with little care and effort. The solutions for various problems have been provided in the respective spatial plans. If these plans and recommendations are implemented in the right spirit most of the problems of rural areas concerning education, health and housing will surely be eradicated.

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CHAPTER SEVEN

SUMMARY AND CONCLUSION

	Summary	
	Conclusion	

SUMMARY:

Misra etal rightly observe that Planning should be seen as a means to so organize human society, that it can adjust itself to the changing socio-technical environment and can use this environment to maximize the welfare of its members. They further assert that Development Planning is designated to generate structural changes in the society in order to facilitate the growth of the national economy. **'Prakasa Rao' and 'Bhatt'** (1964) also state that the regional approach to resource development is essential in India, where regional contrasts are quite sharp.

Any discussion of rural change has to begin with the Gandhian concept of rural development. For a long time, both before and after Independence, rural development programmes were supposed to be Ghandhian in approach. But in recent years, the Gandhian approach has been branded as "romantic" and irrelevant to the future of India. Gandhi was a visionary. For him the villages were the backbone of Indian society. Their transformation was essential. He was, however, neither against urban culture, nor in favour of rural society. He criticized urban society, not because he was against urbanization per se, but because the urban centres, as they have evolved, have been exploitative and parasitic. Gandhiji wanted rural society to be transformed into urban society. Gandhiji knew that 3/4th of India's population will continue to live in villages for decades to come. He could see that this 3/4th will account for over 500 million people by the end of the century. He also knew that industrialization with large-scale industrial enterprises, as units of production would not be fast enough to absorb even the net increment to the fast growing population. He therefore, emphasized "Rural Development" in terms, which appear to indicate that he wanted each village to perpetuate itself with all its antiquated characteristics. Gandhi was essentially a systems analysists and wanted Indian villages to be integrated into a system of urban and rural settlements with two-way "organic" linkages and mutual interaction.

The first attempt to translate some of Gandhi's ideas into action was made soon after independence under the auspices of the "Community Development Programme", with an assent on Panchayat Raj (Local Government), cooperative and agricultural development. Under this programme, the country was divided into development blocks, each consisting of about 100 villages. Each block was allocated extension specialists in agriculture, animal husbandry, social, educational etc. A village level worker assisted each village or small group of villages. Supplementary to these were the health services, family planning, small-scale and cottage industries, marketing and other related programmes. The block headquarters located in rural surroundings were designed to function as nodes through which an all-embracing and spatially dispersed rural development programme could be carried out. In due course, each block set up an elected advisory board to help, formulate and implement block development programme.

But when we assess the performance of these programmes and schemes, we find that they have miserably failed to solve the gigantic problems of the rural areas due to ill conceived multiplicity of programmes, bureaucratic centralism, feudalistic attitude of the politicians and planners, apathetic attitude of officers and functionaries, reluctance of concerned agencies and financial institutions, increasing venality, lack of political commitments, caste chauvinism etc. This has necessitated having fresh look into the entire mechanism of rural development and planning to streamline, strengthen and restructure the whole process of development. The present micro-level study of **"Spatial Planning for ⸻ Development of Shahganj Tehsil of Jaunpur District"** is a modest attempt in this direction.

Although the research project involve a lot of work from literature consultation in the library to the field investigation and laboratory research, yet to make the task easier, the present research work was divided into seven chapters including the present one, which deal with the different aspects of problem in question. However, the present chapter is not devoted exclusively to the study of any important part of the topic, but it is aimed at presenting a brief and balanced summary and conclusion of all six chapters and account of the conclusions drawn there of.

The first chapter is devoted to the conceptual analysis of the various aspects of research project and problems. In this chapter, the theoretical background of the problem in question has been briefly discussed and the social and economic relevance of the study in developing countries like INDIA has also been assessed. An analytical description of various types of regions viz. formal regions, functional regions, planning regions and depressed regions have been given to highlight various properties and characteristics of regions and to bring out the comparative utility of various types of regions for various planning and development purpose.

A brief summary of central place studies which started with the **"Central Place Theory"** of **'Walter Christaller'** in 1933 and was later carried through by the **"Growth Pole Theory"** of **'Perroux' and 'Boudville'** and the **"Growth Foci Concept"** of **'R.P. Mishra'** has also been attempted. The concept of spatial Planning could develop into a more scientific and authentic model for regional development through the efforts of these scholars. The well-knit hierarchy of service centres and their horizontal linkages provide and efficient channel for the prompt movement of goods, services and people, for the decentralized concentration of socio-economic activities and for the free diffusion of innovation in a region. Thus, the discussed model provides a balanced spatio-functional framework for the efficient provision of socio-economic facilities through minimum number of centres and also for the regional development and planning in backward and developing areas.

The concept and the types of planning, concept of regional planning and rationale for regional planning and development are also dealt with. The planning for regional development and the strategies for rural development and various approaches accepted is also described in this chapter. At the end, the problem in question has also been elaborated and the objectives of the study and the hypotheses to be tested during the course of the study have also been listed here.

The second chapter exhaustively covers the entire physical phenomena, population and settlement etc. Shahganj tehsil lies between the parallels of 25^040 and 26^012 North latitudes and the meridians of 82^027 East and 82^042 East Longitudes and covers an area of 706.63 sq. km. From the geographical point of view the area presents a featureless plain and is underlain with a thick mantle of quaternary sediments of the Ganga River system. The study area lies in the sub-tropical type of climate with the characteristic features of monsoon type and has a cycle of seasons-summer, rainy and winter, which owing to their typical weather conditions give rise to three types of cropping patterns viz. Kharif, Rabi and Zaid respectively. The soils of the study area are of mainly three types viz. clay soils, loam soils and clay-loam soils. The natural vegetation of the study area is Tropical Monsoon Deciduous type, which has abundance of Mangoes, Mahua, Sheesham, Neem, Jamun, Bamboo tree etc.

According to the 1991 census the size of the population in the study area approximates to 4,47,350 persons. The population growth during 1901 to 1921 recorded a negative growth, while in post 1921 period the population has increased rapidly. The population of the tehsil according to 1991 census is *less* than double i.e. 4,47,350 the population recorded in 1961 is 2,50,243. If the present growth rate 2.60 percent per year

continues, the population of the study area will touch million marks in future. The density of population varies from 451 to 1197 persons per sq. km. The highest density of 1197 persons per km^2 is found in Pataila Nayaya Panchayat, while the lowest density i.e. 451 persons per km^2 is found in Bumkhana Nayaya Panchayat. The total number of inhabited village is 508, which follows the concentration patterns of population in the Shahganj tehsil. The critical value of settlement density lies between 61.42 settlements per 100 km^2. Khuthan block secured the top most position with 96.87 settlements per 100 km^2, while the Shahganj block occupies the lowest position with 61.42 settlements per 100 km^2. There are two types of settlement viz. Compact and Semi-Compact, which are associated with distinct sets of physio-cultural elements. In rural areas, the houses with mud walls and tiled and thatched roofs are the common features, while in urban areas the houses are built with brick, stones, cements, girders, grills, R.C.C. etc.

The third chapter began with the introduction of the concept of planning units and the central functions, which bind them and its service area in to a symbiotic functional relationship. A comprehensive review of works done by several scholars in India and abroad on the various aspects of the planning units has been attempted to highlight the academic and applied value of the planning units in geography. The discussion on the identification of the planning unit starts with the recognition of the formal beginnings of the service centre studies.

Some practical problems, which come in the way of identification of the planning units, have been listed. The concept of central functions have been analyzed and 41 central functions and services, which determine the general consumption pattern and life style of the regional population have been selected to identify the service centres in the area. The central functions have been categorized into three distinct hierarchical orders on the basis of the 'Median Threshold', which signifies a mid value and lies half way between the 'Entry Point' and 'Saturation Point'. The hierarchical grading of the central functions and services have been substantiated and confirmed by an empirical analysis of the behaviour and the spatial preference of consumers for availing the various grades of central functions and services and the connectivity index.

The discussion of the central functions, planning units includes the theoretical nesting of the planning units. The planning units of various orders have been delimited on the basis of the spatial preference and behaviour of consumers. In the end, the practical implications of using the planning units of service centres as planning region in the study area, has been assessed and evaluated, and finally it has been concluded that the central places of various orders will provide a functional system of regions, which may be used for the locational planning of various social and economic activities for the development and growth of the study area.

The fourth chapter is fully devoted to the analysis of the agricultural development, its existing pattern and the role of spatial planning in the development of Shahganj tehsil. The introduction emphasizes the role of agricultural sector in the socio-economic development of a region and the regional overview presents the salient features of the agricultural system of Shahganj tehsil. A comparative analysis of the changing pattern of land use over time and space has been attempted to highlight the changing nature of agricultural sector. The net sown area averages to about 73.94 percent to total reported area while the double-cropped area is 36.79 percent to Net Sown Area. The cropping pattern during Kharif crop and Rabi crop shows typical subsistence agriculture. Kharif crops are grown with least efforts and cost in the study area. Paddy being the greatest water-requiring crop accounts for 38.98 percent of total sown area of the study area with highest about 10.3 percent in Shahganj block and the lowest Khuthan block. Rabi season requires a different set of temperature and water conditions. The wheat is the chief crop of

the Rabi season and accounts for 39.87 percent of the Net Sown Area of the tehsil with the highest i.e. 75 percent in Shahganj block and the lowest in Suithakalan block. The study area possesses a network of irrigation facilities consisting of canals, tube wells, (private and government) and pump sets. The main source of irrigation in the area are Tube well which irrigate the total area of 44.82 percent while the second source canals accounts for 22.98 percent of the total irrigated area i.e. 74.54 percent. The farmers in the study area generally use indigenous varieties of seeds of almost all crops, while big farmers used the improved H.Y.V. seeds. The elite farmers use the sophisticated agricultural implements and tools in the area. A greater majority of farmers use wooden ploughs and harrows, while big farmers have started using tractors.

The analysis of crop concentration, crop diversification has been made to project the spatial incidence of various crops in all the 40 Nayaya Panchayats of the study area. The cropping intensity provides a clear picture of the extent of double cropping and determines the ratio between the total cropped area and the net sown area. The spatial and temporal variation in the cropping intensity has also been listed. At the end suggestions for the agricultural development and the role of spatial planning have been discussed and proposed for the location of various development inputs at various order have been made.

The Fifth chapter is devoted to the analysis of the Industrial development and begins with the discussion of importance and the role of industries in the socio-economic development of the study area. The assessment and analysis of the potentialities for industrial development in Shahganj tehsil has been made on three-basis viz. industrial resources, industrial infrastructure and assistance and incentives for industrial development. The study area is richly endowed with a variety of resources like masionary sand, brick, clay, vegetal resources, water resources, agricultural resources, livestock resources and human resources, which promise a bright future for industrial development. Although, the study area lacks in sound infra-structural facilities necessary for the proper development of industries, the present network of infrastructural facilities can be strengthened, improved and expanded to meet the future requirements of industrial development. Besides, various agencies and institutions of the government provide a variety of development and financial assistance and several incentives and concession for the industrial development in the area.

The spatial and temporal pattern of the present industrial structure of the study area has been discussed at length. The discussion includes the types of industries, development and growth of industrial units, capital investment and the employment generation structure of industries. There are a large number of small scale and cottage industrial units. About 23 and 253 small scale industries and only one medium scale industrial units are found in the tehsil. The spatial planning for the Industrial development of the study area has been discussed and the major problems viz. lack of capital, raw materials, and infrastructural facilities conventional outlook, technological gap and the high cost of production etc. which hinders the smooth industrial development in Shahganj tehsil, have been identified. At the end, the spatial planning for industrial development of the study area has been suggested. Some large-scale, medium-scale and small-scale industries have been identified and proposed at various orders of service centres to accelerate the pace of industrial development in the study area.

The sixth chapter is devoted to the study of social facilities like education, health and housing in Shahganj tehsil. The chapter starts with a brief mention of the importance of Education, Health and Housing facilities in the overall development of the study area. Later on, the detailed description of the existing level and condition, types, spatial distribution, growth and the major problems of education, health and housing sectors have been presented to highlight the state of these sectors in the study area. To eradicate the

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problems of these sectors and to cater to the requirements of the area for these facilities, three separate spatial plans for each sector have been drawn up and the locations of some critical facilities of education, health and housing have been proposed at various levels in the Shahganj tehsil. At the end, some practicable suggestions and recommendations have been made to give a concrete shape to the three spatial plans.

The last seventh chapter is devoted to presenting a brief summary of the whole work and to drawn certain important conclusions from the present work which may lead to the promotion and acceleration of the process of socio-economic development in the rural areas in general and in Shahganj tehsil in particular.

CONCLUSION:

The present research work, which aimed at making an analytical study of the "Spatial Planning for Development of Shahganj Tehsil of Jaunpur District", has been dealt within seven chapters as, discussed and summarized above. The real problems and discussion of various problems related to the development of Shahganj Tehsil have been confined witching the first six chapters. The seventh and the last chapter relates only to the summary and conclusion of the preceeding six chapters. The spatial planning plays and important role in the agricultural and industrial development and development of social facilities viz. Housing, Education and Health, which constitute essential organs of a region. Hence, these components have been chosen for analysis and discussion under present research project, so that proper planning should be made for the upliftment of the study area. Besides, the above four major sectors have locational and spatial dimensions which are governed and determined by the regional service system. So this combination is more natural than artificial and constitutes the core of geographical studies of the regional development process.

However, the problems facing various sectors of economy viz. agriculture, industry, education, health, settlements have been thoroughly discussed in various chapters and the viable plans (spatial) along with policy recommendations to implement them at the operational level have also been prepared. But the implementation of the plans requires actual work in the study area, which can only be possible by the active participation of the concerned government agencies and departments. Unless the government agencies and departments participate in it, the plans and recommendations have no meaning, howsoever sound and realistic they may be in spirit and intentions.

Moreover, the plan suggested for eradicating the problems facing the four sectors as discussed above and for accelerating the pace of development in the particular sectors in particular and in the study area in general, will need a substantial, physical, financial and manpower resources for giving the plan a practical shape. This also calls for the active participation of government agencies and departments.

However, the participation of people in the planning process and development is no problem. They are readily available and are always willing to extend their active support to the development programmes. Therefore, the full commitment and the willingness of the government in implementing the suggested plan is an indispensable pre-requisite. If it is ensured in full measure and the recommended plans are implemented in the right spirits, most of the problems of socio-economic development of the area will automatically get solved and the study area will move on the path of progress more speedily than ever before.

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QUESTIONNAIRE

PART-A : AT THE SERVICE CENTRE :

- ➤ What is the Name of the Service Centre?
- ➤ Why this places Name?
- ➤ What is the Location (Absolute & Relative) of the Service Centre?
- ➤ What is the Area of the Service Centre?
- ➤ What is the Population of the Service Centre, i.e Decadal Variation, Sex Ratio, Literacy etc.?
- ➤ What are its Administrative Status and when this status was conferred?
- ➤ What are the Administrative Services available at the Centre (District, Tehsil and Block Headquarters, Police Stations and others)?
- ➤ What are the Educational Services available at the Centre (Types and Number of units)?
- ➤ How much distance people should cover to avail these Educational Services?
- ➤ What are the Medical and Health Services available at the Centre (Types and Number of Units, Government or Private)?
- ➤ How much distance people should cover to avail these Medical Services?
- ➤ What are the Transportation Facilities available at the Service Centre (Road, Rail Connections, Bridges, Bus Stations/Junctions etc.)?
- ➤ What distances people travel to avail these Transportation Facilities?
- ➤ What are the Communication Facilities available at the Service Centre (Post Office, Post & Telegraph, Sub Post-Office, Telephone Exchange etc.)?
- ➤ What distance people should cover to avail these Communication Facilities?
- ➤ What facilities for marketing and trade are available at the Centre? (i.e. Hat, Fair, Daily and Weekly markets, Retail and Wholesale markets, Grain Mandi, Mandi-Samiti, Marketing Platforms, Warehouses, Godowns, Cold Storage etc.)
- ➤ Distances from which people are drawn for marketing facilities?

➤ What are the Farm and Extension Services available at the Centre? (Seed, Fertilizer, Insecticides, Implement Centre/Shops, Consultancy Services, Seed Stores, Horticulture, Pisiculture, Sericulture, Soil Conservation Office, Artificial Insemination Centre, Veterinary Hospital etc.)

➤ Distance from which people come to avail these Farm and Extension Services?

➤ What are the Industrial Units and Facilities for Industrial Development located at and around the Centre? (Cottage, Agro-based, Small, Medium and Large Industries, Types and Units, Industrial Estate-Big and Small, Industrial Incentives and Assistances)

➤ Do the Industrial Units import the Raw Material, Power and Labour or utilize locally the available ones?

➤ What is the position of different Industrial Units in terms of Year of Location, Capital Invested, Raw Materials Used, Employment Generated, Items Produced and Markets, Profit Earned?

➤ What is the Nature and Form of benefits that occurs to the surrounding population from the Industrial Units?

➤ What are the Credit and Finance Facilities available at the Centre? (Credit and Cooperative Society, Cooperative Bank, Rural Bank, Nationalized Bank, Commercial Bank, Other Financial Institutions or Agencies for promoting agricultural and industrial development)

➤ What are the Progress and Achievement of these agencies in terms of providing Credit and Finance to the area?

➤ Distances from which people are drawn to avail theses Services?

➤ What are the Public Utility Services available at the Centre? (Water Supply, Public Sanitation and Hygiene etc.)

➤ What is the Morphological Structure of Housing and Condition at the Centre?

➤ What are the Commercial Services available at the Centre on Wholesale and Retail level? (Grain, Grocery, Fruits, Vegetables, Kirana Shop/General Stores, Books/Stationary, Textile/Hosiery, Utensil, Hardware/Software, Hotel/Restaurant, Electric/Electronic Goods, House Building Materials, Jewellery, Cosmetics, Confectionary Sweets, Tea Shop, Engineering Goods, Spare parts, Ready Garments, Steel/Wooden Furniture, Fabrication Shops, Medical Stores, Diesel/Petrol/Kerosene/Pump Shops-Types and Number of Units)

➤ Distances from which people come to avail these Services at the Centre?

➤ What are the repair & other Services available at the Centre? (Cycle Repair, Umbrella/Shoe Repair, Utensil Repair, Radio/Watch Repair, Auto Repair, Dentists, Chemist & Druggist, Tent Decoration, Item Suppliers, Caterer, Laundry Services, Tailoring Services, Rickshaw pullers, Taxi Drivers, Goldsmith, Ironsmith, Carpenters, Vendors – Types and Numbers etc.)

- Distances from which people come to avail these services?
- What are the Cultural and Recreational Services available at the Centre? (Historical Places, Monuments, Temple/Church/Mosque, Other Religious Places, Charitable Trusts, Dharamshalas, Voluntary Organizations, Cultural Organizations, Public Library, Cinema Hall, Drama Hall, Clubs, Park and Playgrounds-Types and Number of Units etc.)
- Distances from which people are drawn to avail these services?
- What are the major items that are Bought and Sold at the Centres?
- What is the general behaviour of consumers who visit these Centres?
- Why do people prefer to visit this Centre? (For Nearness, Low Costs, Competitive Rates, Greater Variety, Better Quality, Traditional/Sentimental Attachment, Psychological Convenience/Comfort and any other Reason)
- What are the major Problems being faced by the Centre for the last few years and even at present?
- What measures should be taken to improve the Socio-Economic conditions at the Centre, so that it plays a vital role in the development of the surrounding area?

PART-B : AROUND THE SERVICE CENTRE :

- What is the approximate area served by the Centre? (Area may be defined by the Number of Peripheral Villages)
- What is the approximate population served by the Centre? (May be determined by the total population of all villages within the sphere of influence of the Centre)
- What is the general Geographical Character of the area served by the Centre? (Relief, Wheather, Drainage, Vegetation etc.)
- What are the important resources found within the area served by the Centre? (Distribution and production)
- What are the Economic, Commercial and Industrial uses of the resources found in the area served by the Centre?
- What are the major types of Soils found in the area?
- Does the area suffer from Soil Erosion, Denudation, Usarisation etc.? (Places to be Indicated)
- What type of farming is carried out in the area served? (Primitive, Traditional, Subsistence, Intensive Subsistence, Intensive Commercial, Mixed Farming with Animal Husbandry etc.)

- What are the Crops produced in three major Cropping seasons in the area served? (Crops grown in Kharif, Rabi and Zaid Season, if possible along with their production and acreage)
- What is the state of use of Input in the Farming? (Use of Irrigation, Seeds, Fertilizers, Insecticides, Implements per acre in the area)
- What is the condition of Animal Husbandry, Pisiculture, Silviculture, Sericulture in the area served?
- What are the major Commercial Crops grown in the area?
- What are the major Industrial Crops grown in the area?
- What are Agricultural Items, which are presently being used as raw materials in the Industrial Units located at the Centre?
- Does the area supply the Labour Force to the Industrial Units located at the Centre? (If Yes, indicate the size of labour force supplied)
- How many people of the area get Employment (Self, Bussiness, Establishments, Informal Sector) annually at the Centre?
- Do roads and rails with the Centre adequately link the area? (Indicate the road and rail connections and means of conveyance plying on them)
- Is the Centre equally accessible to all parts of the area served by it?
- What are the major items and services, which the areas receive from the Centre?
- What are the major problems of the area served by the Centre?
- What measures should be taken to accelerate the process of mutual interaction between the area and the Centre, to further tone up the process of development in the area?
- Any other observation?